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AMERICAN
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CONTENTS.

PAGE

Editorial—
European Chronicles 147

Original Articles—
Measures Against Animal Tuberculosis in Denmark 161
Important Relation of the Veterinarian to Public Health 186
Three Diseases of Animals which have Recently Assumed Importance to the State Sanitarian 198
Dairy Inspection 209
The Use of Tuberculin in Controlling Tuberculosis in Herds 220

Reports of Cases—
Obstetrical Cases 228
A Two-headed Calf 229
Antiperiostin 230

Army Veterinary Department—
Provision for Physically Disabled Veterinarians 232

PAGE

Abstracts from Exchanges—
English Review 233
French Review 237
German Review 241

Civil Service Examinations—
Editor 244
Chief, Cattle and Grain Investigation Laboratory 245

Bibliography 247

Society Meetings—
International Congress on Tuberculosis .. 249
American Veterinary Medical Association 256
Minnesota State Veterinary Medical Association 267
Georgia State Veterinary Association 283
Veterinary Association of the District of Columbia 285

News and Items 286

Veterinary Medical Association Meetings 287

Publishers' Department 288

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AMERICAN VETERINARY REVIEW.

NOVEMBER, 1908.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, September 15, 1908.

VETERINARY NOTES—A CORRECTION.—The "Veterinary Notes" (No. 4) of Parke, Davis & Co., have arrived, with the likeness of Wm. Herbert Lowe, D.V.S., President American Veterinary Medical Association (1905-6), on the outside cover page.

It is the continuation of the series of Presidents of the A. V. M. A., inaugurated by the Editor of "Veterinary Notes."

I have read the biography of the Ex-President of our national association, and may be allowed to correct some parts of it, incorrectly stated by "Veterinary Notes."

It is said that "Dr. Lowe is now, and has been for several "months, the Managing Editor of the AMERICAN VETERINARY "REVIEW. He had for many years been a member of the staff "of editorial collaborators, and the late Dr. Roscoe R. Bell, "realizing early in the present year that he was soon to pass "away, called in Dr. Lowe and asked him to assume the task of "directing the editorial work of the journal, as the associate of "Dr. A. Liautard, of Paris, who still continues his position as "Editor-in-Chief."

The corrections are to the effect that Dr. Lowe is *not* managing editor of the AMERICAN VETERINARY REVIEW. This important post is occupied by Dr. R. W. Ellis. When Dr. Bell's health began to fail rapidly in November last, Dr. Lowe was requested to contribute to the editorial work of the REVIEW, and in January, 1908, was made Associate Editor to Drs. Liautard, Bell and Ellis. On the death of Dr. Bell in the early part of the

month following, the direction of the editorial work of the journal passed into the hands of Dr. Ellis (the then only remaining editor in America), with the approval of the Chief Editor, Prof. Liautard. Dr. Lowe was continued on the staff as associate to Drs. Liautard and Ellis, which position he has creditably filled and still occupies. All material for publication, as well as all business communications, should *continue* to be addressed to the AMERICAN VETERINARY REVIEW, 509 West One Hundred and Fifty-second street, New York, N. Y.

* * *

BIBLIOGRAPHY: THE HISTORY OF THE SCHOOL OF ALFORT.—A so far unique addition has just been made to the literature of the veterinary profession of the whole world.

Prof. Railliet, of Alfort, and Mr. Moule have completed the enormous task that they undertook, and to-day the *History of the School of Alfort* is published and will, in a short time, be found in the library, not only of every Alforian veterinarian, but in that of every veterinary institution, whether in the old or in the new world.

It is indeed an enormous labor, almost a work of giants, that these gentlemen have accomplished, which has demanded several years of long and patient researches among the many documents that were put at their disposition in the national archives, those of the schools, and with the books, pamphlets and professional journals where information of more or less value could be found.

And these investigations were necessary, for if already previous attempts had been made, attempts which on many occasions were not very exact, the well-known reputation of the two authors of the new work imposed upon them that every effort should be exerted so as to do justice to the subject and show to their readers at large the well due homage belonging to their undertaking and to their alma mater, which is that also of so many generations of veterinarians, that of the many who have figured in the work of spreading veterinary science, and of those who from Alfort have given to many schools of the different

parts of the world the benefit of their Alforian education, among which I extract from the book the schools of Padua, Dresden, Vienna, Hanover, Turin, Carlsruhe, Munich, Berlin, Milan, London, Madrid, Naples, Abouzabel in Egypt, La Plata, Lisbonne, Bruxelles, Constantinople, Bucharest, New York, Philadelphia, etc., etc.

The work, which covers over 800 pages, is handsomely illustrated by 92 plates, among which are those of Bourgelat, Bertin, Chabert, Vicq d'Azir, etc., etc., from the first days of the creation of the school to modern times, and the manner in which the whole work has been done and is offered shows how well the House of Asselin & Houzeau appreciated the superiority of the new publication, which is arranged as follows:

First, a preface, where the authors state that "although the school is nearly one century and a half old, no one has yet attempted to describe the various stages of its development." There was a want which had to be filled and they have attempted to do it as a respectful homage to their alma mater and also to show the relative importance that belongs to the school in relation with the development and progress of the veterinary profession. The "History of the School of Alfort" is divided in four parts. In the first are three chapters: (1) Veterinary medicine before the foundation of the schools; (2) The first veterinary schools, Lyon, Limoges; (3) The School of Paris: Temporary installation. Transfer to Alfort.

The second part treats of the evolution at Alfort, and is, from 1766 to 1903, divided into nine periods. There the authors consider the theoretical and practical teaching of the school, treat of what related to the students, to the curriculum, to the professional societies, etc., and recall the memory of the victims of their professional duties.

The third part treats of the financial questions, and the fourth of the various buildings and materials.

It is not possible in this short notice to mention all the points of importance and value that can be found in this new book. Historical facts, anecdotes that have taken place in those many

years, faults and errors that have been committed, most valuable advice for other similar institutions, etc., etc., all can be found in MM. Railliet and Moule's last publication.

They certainly deserve much credit, and the veterinary profession the world over must feel indebted to them for the work they have so conscientiously and successfully accomplished.

* * *

IMPERIAL INSTITUTE OF EXPERIMENTAL MEDICINE AT ST. PETERSBURG.—Among the material accumulated on my desk during my vacation, I found numbers 4 and 5 of the Imperial Institute of Experimental Medicine at St. Petersburg. They complete the thirteenth volume, and in them I saw the Comptes rendus of the scientific works carried out at the institute during the year 1906. Their number and value are of great importance.

To give an idea of the work done in that institution, let us give a glance to the peculiar subdivision of the departments where the scientific researches are carried out and look at the number of assistants or workers each department occupies besides the principal director and his special assistants, who are quite numerous. There are altogether twelve sections or services:

1. Section of Physiology, which, besides the staff, has fifteen investigators. Among the work that has been carried out in that laboratory, it is stated that 5,978 vials of gastric juice have been prepared and delivered.

2. Section of Pathological Anatomy, with eleven co-workers.

3. That of Biological Chemistry, with twenty-three workers.

4. That of General Microbiology, with four assistants.

5. That of Epizootology, where, with the staff and twelve other assistants, works on glanders, tuberculosis and trypanosomes receive special attention. In this laboratory there have been prepared and delivered 25,883 vials of mallein, 12,975 of tuberculin, and 641 of antidysenteric serum.

6. The Laboratory of General Pathology has, besides its staff, ten workers.

7. The Practical Service for the Preventive Treatment of Rabies has a large staff and only four outside workers.

8. The Pathologo-Bacteriologic Laboratory counts thirty-eight co-operators.

9. The Service of Public Hygiene.

10. The Pathological Laboratory.

11. The special laboratory for the preparation of products against pest; and finally

12. The Service of Disinfections.

Each of these have published a large number of reports and papers relating to their special work, all of great value. They constitute important evidences of the immense amount of work carried on by the institute. In previous issues of the REVIEW, I have made our readers acquainted with notices of some of them.

In the last numbers that I have received there are contributions of great interest to veterinarians, upon which I will have occasion to refer later on. Certainly, the contributions of Dr. W. W. Podwyssotzki on the "Alterations of the Sub-maxillary Gland in Rabies," that of Aimée Hortwitz, Study of the bacterian flora of the stomach and small intestines of dogs, are deserving of more than this general notice.

* * *

PLANTAR TENOTOMY.—Is plantar tenotomy as taught in our classical works to be reserved for desperate cases? Is it, as claimed by some, more injurious than the disease against which it is performed, and, on these accounts, is it losing its popularity to see that of the perforatus tendon alone be the indication in incurable sprains of the tendinous apparatus of the canon, incurable affections which so often give rise to frequent return of lameness and end generally in rendering an animal useless?

Such is the object of a communication that I have found in the June and July issues of the *Recueil de Medecine Vetcrinaire,* written by an army veterinarian, Mr. A. Querreau.

For fifteen years he has experimented with this mode of treatment, and, as the results of his experiments, he has come to

the conclusions that the advantages that the tenotomy of the perforatus presents are such that it is certainly the most radical and most economical treatment to resort to in cases of recidiving or incurable sprains of the tendons, of the radial reinforcing band, of the suspensory ligament, and even in the relief of some incurable lameness due to traumatic synovitis of the great sesamoid sheath. Indeed, this operation gives, until the cicatrization is organized and is complete, radical rest to the perforatus, to the radial band, to its ring, and to its insertion upon the second phalanx. It differs from the classical tenotomy by removing entirely a function (that of the flexion of the phalanges), and simply relieves a secondary action, that of the perforatus. When this is divided, flexion of the phalanges upon each other remains integrally insured by their principal flexor or the perforans. And, besides, it places the weak tendon (perforatus) under the influence of the strong (perforans). Indeed, the former is the weakest as long as it is liable to snap in its entire length, from its radial band to its insertion upon the second phalanx. Finally, perforatus tenotomy is justified by the general principle so often applied in surgery, namely, that it is better to remove an incurable organ than to preserve it when its condition of disease and pain may compromise the functions of surrounding organs that have remained healthy.

* * *

Mr. Querreau performs tenotomy of the perforatus in two different manners, according to cases: (1) Subcutaneously and according to the classical manner, when its objects are to remedy lesions of the radial band, of the ring, or of the great sesamoid synovial. (2) On the contrary, it must be performed open, when it is to relieve lesions of the body of the perforatus, accompanied with induration of the tendon. In describing the various stages of the operation and the specific cares in the dressing, Mr. Querreau insists upon the necessity of packing well the cavity and the surface of the wound with pads of iodoformed gauze before the closing of the wound with sutures. The use of a shoe with a

long toe is also recommended to avoid knuckling. There is always a large callous following the operation, but this is almost completely resorbed after a few months.

A great number of observed cases are recorded of the successes obtained with this tenotomy against sprains of the radial band (15 cases and 13 perfect successes), against sprains of the perforatus in its metacarpal portion (6 cases with 6 successes), against incurable lesions of the great sesamoid sheath (2 cases, with one success and one failure).

To resume: The efficacy of perforatus tenotomy is shown clearly by the above considerations. The greatest objection is the possibility of leaving a permanent more or less disfiguring nodule on the length of the tendon, nodosity which is no more unsightly than that left by the retracted and indurated tendon before operation and which cannot be more objectionable than the ugly cicatrix which is left by other forms of treatment such as blistering, firing, etc.

With this single objection, there cannot be a doubt that this operation is bound to become the favorite means of treatment for injuries of that kind.

* * *

ELEVENTH ANNUAL MEETING OF INTERSTATE ASSOCIATION OF LIVE STOCK SANITARY BOARDS.—It was quite a surprise to me to find in my desk lately the report of the eleventh annual meeting of the Interstate Association of Live Stock Sanitary Boards. I acknowledge with regret that this was the first information, as far as I recollect, of the existence of such an organization; and the perusal of the comptes rendus made me feel that, personally, I had sustained a great loss by not having known of it before, of its meetings and of its work. I have no doubt that some of my readers will feel as I did.

The eleventh annual meeting was held in the parlors of the Murphy Hotel, in Richmond, Virginia, on September 16 and 17, 1907, more than one year ago. I cannot give a detailed examination of the subjects that were treated, and yet in reading

the titles of the papers that were presented and discussed, one may judge how interesting the meeting must have been:

"State Control of Hog Cholera," by Dr. J. H. McNeil, of Iowa; "Tick Eradication," by Dr. Tait Butler; "Federal Inspection of Meat," by Dr. A. D. Melvin; "Purchase of Cows for Slaughter Subject to Post-mortem Inspection," by Dr. I. E. Dyson; "Relation of State Veterinarians and Live Stock Sanitary Boards to the Public Health," by Dr. C. G. Lamb; "Rabies and Its Control," by Dr. Austin Peters; "Animal Parasites," by Dr. J. G. Ferneyhough.

The meeting lasted two days and important resolutions were taken:

On the subject of "Federal Meat Inspection," "that the different states should organize and put in operation a system of meat inspection."

On the subject of "Eradication of the Fever Tick," "that the appropriation made by Congress for this work be increased to $500,000."

On the subject of "Hog Cholera and Tuberculosis," "that the attention of the sanitary authorities of each state and national government be called to the fact that these diseases are assuming such importance that their eradication can only be accomplished by the combined and concerted action of all sanitary authorities and that such steps should be taken to insure perfect combination of such authorities, to the end that these diseases may eventually be wiped out."

On the subject of "Milk Inspection," "the association urged upon all state authorities and the public generally the absolute necessity of state supervision of the milk supply, and that all states pass laws requiring the testing of all dairy cows with tuberculin."

The comptes rendus concludes with reports of the sanitary condition of some states, for instance, in Arkansas by Dr. W. Linton, in Colorado by Dr. C. G. Lamb, in Illinois by Dr. J. W. Wright, in Maryland by Dr. G. Allen Jarman, in Missouri by

Dr. D. F. Luckey, in Minnesota by Dr. M. S. Whitcomb, and in Virginia by Dr. J. C. Ferneyhough.

No doubt that by this time the twelfth annual meeting of this working association has taken place and that at an early date I may be fortunate enough to glance at their next report. The profession at large, I am sure, would like to hear from it.

* * *

HIPPOPHAGY.—Hippophagy is no longer a special subject of curiosity. It has entered into the customs and habits of people, although in some countries it has spread more extensively than in others. Anyhow, its origin is old. Already, in olden times, horses were certainly killed and used for human food. According to Julius Caesar, Gallics were especially fond of horse meat; and, according to Pliny, young donkeys were especially fattened for the table of patricians. But it must be acknowledged that there is a great difference between the use that was made of horse meat in olden times and that of to-day. As it is certainly less on account of palatable taste, than to palliate against the difficulties for obtaining meat for use that horseflesh is resorted to. And yet there is an important opening offered for this use. For some time, physicians, at least in France, have become great propagators of the use of horse meat. In prescribing to their patients the continued ingestion of raw horseflesh, in preference to that of beef which is higher in price, they have incited poor, and even people in better social situation, to obtain from the muscles of healthy horses a better supply of energy for their failing strength.

Hippophagy has been the object of many writings. Physicians, veterinarians and sanitarians have all published articles upon it. Laws, sanitary regulations, slaughter-houses, and shops have been established, and the number of solipeds that have been delivered for public consumption has, since 1866, when it was officially recognized in France, been constantly increasing. In Paris, between 1866 and 1869, the number scarcely reached 3,000; in 1906 there were nearly 60,000. In Germany, during 1906, nearly 150,000 solipeds were slaughtered and sent to market.

In Belgium, says the chief editor of the *Gazette du Village*, the number of horses slaughtered, in proportion to the extent of its territory, is even larger than in France. Therefore, the development of hippophagy is slowly progressing in all countries, except in England, where no shops exist where horse meat is sold.

In a recent communication on the subject of hippophagy, I read the following taken from the comptes rendus of the meeting of the Congres Hippique:

"But certainly it is America which leads in this special in-
"dustry (that of horse meat supplied as food). There, horses
"are raised especially for this purpose. They are typical horses,
"not too big, but having an excellent meat.

"When hippophagic shops made their appearance in America,
"the butchers that sold bovine meat protested and made vigor-
"ous objections and all possible efforts to stop them. But Car-
"negie became interested in the question; he gave the new in-
"dustry its aid, and to-day, in the suburbs of Chicago, there exist
"special factories where horse meat is prepared in all manners.
"It is made in preserves, it is made in sausages, it is salted and
"frozen."

"These factories do not export their products."

I do not know how far those statements are correct and I cannot help thinking that the writer has committed a grave error, as an examination of the twenty-third annual report of the Bureau of Animal Industry shows that between 1891 and 1903, no horses had been inspected at abattoirs for slaughter, except in the years from 1899 to 1903, when about 3,000 were inspected, in 1899, a little over 5,000 in 1900, to drop below 2,000 in 1901 and 1902, and finally died out in 1903 with 344 inspections.

At any rate, if there are horse meat shops in the United States, I must acknowledge that I do not know it.

* * *

In the July issue of the REVIEW there was a list of the gentlemen that Prof. Leonard Pearson had invited to serve as mem-

bers of the National Committee for the United States at the ninth International Veterinary Congress.

In Circular No. 2, just issued by the Executive Committee at The Hague, this list has been published, among those of other countries, and a glance at them shows that indeed these national committees will be representatives from Holland, of course, and then from North and South Africa, Austria, Belgium, Bulgaria, Denmark, England, France, Germany, Hungaria, Italy, Norway, Roumania, Russia, Servia, Spain, Sweden and Switzerland. Our American friends can be assured that they will be in good company.

The circular gives also the following program of the work of the Congress:

A.—The Congress will open on September 13 *and close on September* 18, 1909.

N. B.—The names of the reporters will be published afterward.

B.—Official opening meeting, September 13*th, at* 2 *o'clock p. m.*

C.—General meetings: September 14, 15, 16, 17, 18, *at* 9 *o'clock a. m., September* 14, *at* 2.30 *o'clock p. m.*

SUBJECTS.

1. Government efforts against swine plague and hog cholera (swine fever) based upon the recent researches regarding their etiology, vaccination, sero-vaccination, etc.

2. The protection of the practice of veterinary medicine.

3. The rôle of the veterinarian as expert in zootechnical questions.

4. The conditions necessary to obtain the doctorate in veterinary science.

5. The sanitary control of milk and the obligatory systematic inspection of meat.

6. The methods employed in removing the carcases and meat, with the object of rendering them harmless.

7. The prophylaxis and pathology of protozoan diseases (piroplasmoses, trypanosomoses) with demonstration of the

specific parasites and of the transmitting animals (ticks, mosquitoes, etc.).

8. The governmental control of sera and bacterial products and their preparation by the government.

9. Avian tuberculosis in its relation to tuberculosis in mammalia.

10. The sterility of cows and its dependence upon the infectious diseases of the genital organs.

11. Governmental efforts against tuberculosis, with regard to the ways of infection in this disease.

12. Construction and interior of stables in relation to the prophylaxis of diseases of animals, especially tuberculosis, and also to the hygiene of milk.

D.—Sections of the Congress:

I. Public veterinary medicine; control of food. II. Pathology and bacteriology. III. Practical veterinary medicine. IV. Zootechny and veterinary hygiene. V. Tropical diseases of animals.

E.—Meetings of Sections: the 16th and 17th September, at 2.30 o'clock p. m.

FIRST SECTION.

1. Inspection of fish, game, poultry, crustaceæ, and of other animal foods, not included in the question 5 of the general meetings, in relation to the hygiene of man.

2. Insurance of stock in relation to obligatory meat inspection.

3. Disinfection of the vehicles of transport and animal products in international traffic.

4. Sero-therapy and sero-prophylaxis of foot-and-mouth disease and their value from the point of view of legal sanitary police.

SECOND SECTION.

1. The diagnosis of infectious diseases by means of the recently discovered reactions of immunity (except the subcutaneous injection of tuberculin and mallein).

2. Etiology and pathogeny of malignant tumors, especially of carcinoma.

3. Vaccination against tuberculosis.

4. Anatomo- and histo-pathological diagnosis of rabies.

THIRD SECTION.

1. Specific chronic enteritis of cattle.

2. Infectious pleuro-pneumonia of horses.

3. Hemostasis in the modern methods of castration.

4. Pathology and therapeutics of streptococcic infections in the domestic animals.

5. New investigations of the two last years concerning chronic deforming arthritis of horses.

FOURTH SECTION.

1. Physiology of milk-secretion; relation between the external form of cows and the production of milk.

2. Influence of the various foods upon the quality of the products (meat, milk). Application of Kellner's principle in the nourishing of animals from the point of view of the production of milk, meat and strength.

3. Prevention of the prejudicial effects of the forced breeding for special purposes.

4. Teaching of zootechny.

FIFTH SECTION.

1. Hygiene in the maritime transport of cattle.

2. Sanitary police in colonies.

3. Teaching and laboratories for researches in tropical diseases.

F.—Official closing meeting, September 18, at 2 p. m.

As final notes, the circular adds:

1. The amount of the contribution has been fixed at 10 guilders = 17 shillings = 21 francs = 17 marks.

2. The application for the membership is to be addressed to Professor D. F. van Esveld, of the State Veterinary School at Utrecht, General Treasurer, accompanied by an order for the above-mentioned amount.

3. The members will receive the plan of the statute of the Congress, in addition to their card.

4. The names of the reporters will be published as soon as possible.

5. During the Congress the monument of the late Professor Thomassen will be inaugurated in the Veterinary School at Utrecht.

A. L.

NEW YORK'S zoological park has 4,050 living specimens, the next largest being in Berlin, where there are 3,150 specimens.

VETERINARY COLLEGES OF THE OLD WORLD.—President James, of the University of Illinois, has returned from his trip abroad, which had for one of its missions an investigation of the principal veterinary colleges of the old world. He was astonished at the importance attached to these institutions and the activities of several nations in extending and perfecting their work. Belgium has spent over $1,000,000 on a new plant for its veterinary college, and Germany has planned to expend considerably more than double that amount in reconstructing and re-equipping its veterinary schools. It is likely that work on the new state college, which will be located at the Chicago stock yards, will soon begin. The breaking of ground has awaited President James' return, with the helpful suggestions he has gathered on the other side.—(*The Breeders' Gazette.*)

A LARGE TUMOR.—There arrived at the Bourbon Stock Yards, Louisville, Ky., on October 18, 1908, a cow weighing about 1,100 pounds, and probably ten years of age. Her abdomen was very large and, while she was able to walk from the car, she was soon afterward found down and unable to rise, whereupon she as ordered destroyed by the city live stock inspector and the carcass was taken to a nearby fertilizer plant for final disposition. Upon dissection there was found in connection with the uterus a tumor which weighed, including the very small portion of normal uterine tissue remaining, 350 pounds.

From a macroscopical inspection only, the tumor seemed mostly of a fatty character, although portions of it were quite hard and dense and apparently fibrous in structure.—(*G. W. Butler, Veterinary Inspector, B. A. I., Louisville, Ky.*)

ORIGINAL ARTICLES.

MEASURES AGAINST ANIMAL TUBERCULOSIS IN DENMARK.

By Dr. Bernard Bang, Professor of Pathology and Therapeutics, Royal Veterinary School, Copenhagen, Delegate of the Danish Government.

Report of the Danish National Committee submitted to the International Congress on Tuberculosis, Washington, D. C., 1908.

Measures against tuberculosis among domestic animals were first taken by the state by Act of April 14, 1893, relating to the Prevention of Infectious Diseases Among Domestic Animals. According to section 11 of this act cattle owners are prohibited:

(a) From sending animals (cattle and pigs) that *obviously suffer from tuberculosis,* to fairs and cattle shows, to common pastures, stables, etc., of other cattle owners as well as from selling such animals, except for slaughter.

(b) From selling or using as human food animals or any part of an animal, *obviously suffering from tuberculosis,* unless a veterinary surgeon's certificate be produced stating that a previous examination of the carcass and the entrails has shown the meat to be fit for human consumption.

(c) From selling the milk of cows suffering from *tuberculosis of the udder* or using it as human food or in the preparation of food or as food for animals, except when *boiled.*

These measures have, however, produced few practical results. It is true that a number of animals have been rejected when presented for admittance at fairs and common pastures or for exportation, and no doubt the sale of such animals for other than killing purposes has now and then been prevented; still, it is difficult to impose fines in such cases, the term *"obviously tuberculous"* being too vague. Paragraphs b and c were amended later, so as to provide more fully for the cases mentioned in them.

By the Act of April 14, 1893, relating to *State Help Towards the Combating of Tuberculosis Among Cattle,* an attempt was

made to encourage cattle farmers to take measures to get rid of tuberculosis among their stock. By this act a sum of 50,000 Kr.* yearly (afterwards increased to 100,000 Kr.) was—for a term of five years—placed at the disposal of the Ministry of Agriculture to pay for gratis distribution of *tuberculin,* for *the injection of this substance by veterinary surgeons,* for measuring the temperature of the animals and for giving directions as to isolation, if the farmer in question wished to apply the *tuberculin test* to ascertain which of his animals were infected with tuberculosis, but only *on condition of his binding himself to keep the healthy animals safely isolated from those suffering from tuberculosis.*

As the primary object of these measures was to promote the breeding of *healthy young cattle,* at first only young animals were tested gratis; soon, however, the test was also applied gratis in the case of full-grown animals, and gradually it became quite common to subject the whole stock of a farm to the tuberculin test in order to make it possible to isolate the healthy among the full-grown animals.

The passing of this act was chiefly due to a proposal of B. Bang, who for some years past had been studying the efficacy of tuberculin for proving the existence of tuberculosis among cattle and other domestic animals and who had worked out a system for the extermination of tuberculosis in an infected stock by thorough *isolation* of the animals that were not yet attacked and by *preventing the transmission of infection through raw milk.*

According to Bang, *tuberculosis is a purely contagious disease.* It is true that infection may take place in the uterus so that the calf is born tuberculous, but this happens very rarely, practically only when the cow is highly tuberculous. *Most calves are born healthy,* even if born of somewhat tuberculous cows, and they will remain so, if they are only preserved from infection. In the first place, *tubercle bacilli are not ubiquitous.* They are mostly found in stables, where tuberculous animals discharging

* 1 Kr. (Krone) = 100 O. 1 (Ore) = about 26 cents.

tubercle bacilli are or have lately been stabled. Secondly, *raw milk very often transmits infection,* mostly, it is true, when the udder of the cow is attacked, but also frequently when this is not the case, partly because tubercle bacilli *may* be excreted through an apparently healthy udder, if the cow is highly tuberculous, partly because the pure milk may be fouled by the introduction of tubercle bacilli through flux of the uterus or by particles of the feces of highly tuberculous cows.

The tuberculin tests proved that a great number of cattle of all the herds *among which tuberculosis had long been prevalent* were infected with this disease. *Post mortem examinations proved, however, that most of the reacting animals were only slightly affected;* in many cases only small caseous-calcareous *deposits* were found in a few of the lymphatic glands, processes that no doubt often remain unchanged for years or are even sometimes cured.

According to Bang, therefore, there was no reason to kill milch cows that did not show clinical signs of tuberculosis, but only reaction to tuberculin. So long as they were stabled in isolated stables, there was no reason why they should be killed or why their milk should not be used and *calves bred from them,* provided the latter were as soon as possible removed from the infected stable and were not infected by being fed on the raw milk of tuberculous animals. The highly tuberculous animals should not, of course, be allowed to form part of the stock, but should be killed as soon as possible—a measure which had certainly been taken rather often in former times though not nearly as often as circumstances demanded.

It will be seen that these measures—devised by Bang and founded on the above facts—for combating tuberculosis among cattle, interfered as little as possible with the breeding. He wanted farmers to remove from their stock only such animals as from reasons of general economy they would feel inclined to remove, *i. e.,* the animals that a merely clinical examination proved to be tuberculous. They were allowed to keep those that

did not appear tuberculous until subjected to the tuberculin test, as long as they found they yielded sufficient milk, and to breed their calves, if only they took good care to keep the latter isolated from the perfectly healthy animals. If the isolation could not be carried out in any safer way (which would, of course, be preferable), a part of the stable might be partitioned off by a wooden partition, reaching from the ceiling to the floor. The common water-pipe would have to be cut off, or if this was not practicable, it might be sufficient to let the water pass *first* through the part of the stable reserved for the healthy animals. If absolutely necessary, it would be permissible to have tight-fitting doors in the partition wall—though this has certainly often proved a drawback, it being, of course, very difficult to keep such doors shut when not in actual use. Whenever it is at all possible, as it would be in the case of a large stock, there ought to be two sets of stable hands—one for the healthy animals, one for the infected ones. If this was not possible the servants would have to tend and milk the healthy animals *first* and have two sets of boots or shoes and overalls as well as of implements, one for each class of animal. In the pastures the two divisions would also have to be kept apart as much as possible, though the danger is considered to be less when the animals are grazing than when they are in the stable.

As from the very outset it was quite clear to Bang that isolation of the animals on the same farm, especially if such had to be effected in *one* building by means of a partition wall, could not be a complete guarantee against the introduction of contagious matter among the healthy animals, and that the tuberculin test was not in every case quite infallible (for instance, the animals might have been infected just before the test and so be unable to react), he directed that the healthy division was to be subjected to the tuberculin test once—or preferably twice—a year, so that those animals which, in spite of the isolation proved to be infected, might be removed without delay from the healthy division to the reacting one, his object being *the gradual purifi-*

cation of an infected stock during the course of several years. It would thus become possible for a farmer possessing a stock in itself valuable, though infected with tuberculosis, to gradually convert it into a healthy one by breeding from his own stock.

As early as 1892 Bang was enabled by a special government grant to demonstrate the practicability of his theories by gradually changing a highly tuberculous stock into a healthy one. The farm of Thurebylille was selected for this experiment. On the first application of the test 131 animals reacted, while only 77, mostly young animals, were found to be healthy. Of the milch cows 80 per cent. reacted, and of the young cattle and calves only 40 per cent. The isolation of the two classes, the reacting and the healthy ones, from each other was effected by partitioning off a part of the stable with a solid wooden partition, the shed occupied by the calves forming part of the healthy division. There were two sets of stable hands, one for each of the two divisions, which were, moreover, kept apart when grazing as well as in the stable.

The practicability of the plan was soon proved, as the calves which were born in the infected division of reacting parents were nearly all found to be healthy (very few being born tuberculous) and remained so, provided they were at once removed from the infected stable and fed on boiled milk, their mother's milk (raw) only being given to them an the first day.

Still, as had been expected, year by year some of the animals of the healthy division did not pass the half-yearly test; in other words, some infection was introduced into the healthy division in spite of the isolation. Generally it was only one or a few per cent. that did not pass the test; on a few occasions, however, it was as much as nine per cent. It will thus be seen that the elimination of the infection proceeded rather slowly, but then circumstances were rather unfavorable, because the isolation was not a thorough one, the daily control less effective than might have been desired, and lastly because the farmer was not sufficiently alive to the importance of removing highly tuberculous animals, discharging great quantities of bacilli, from the reacting division.

In spite of these drawbacks the healthy division increased year by year and at last the task of eliminating the disease was successfully accomplished by selling the remainder of the reacting division, about thirty head of cattle. The farm is now one of those that supply Copenhagen with "Milk for Infants" (*i. e.*, superior milk); the stock is every year subjected to the tuberculin test and the last time, in 1907, *not one* out of 211 animals reacted.

As the Act of 1893 provided generous assistance to such cattle farmers as were anxious to improve the sanitary condition of their stock by employing the method which had been tried at Thurebylille, a great number of both small and large farmers set to work, in many cases with excellent results. At all large farms, however, where tuberculosis is generally very prevalent, the elimination of infection progressd *slowly*, just as had been the case at Thurebylille, a few of the animals of the healthy division reacting whenever they were subjected to the test a second time. The stricter the isolation, the better the results; the best results being, of course, achieved, when it was possible to remove the healthy animals to another farm. The thorough *disinfection* of stables where highly tuberculous animals had been stabled, in order to destroy all contagious matter, often proved a very difficult task, especially in buildings where the woodwork and the stone floors were old and dilapidated. Where tuberculosis was not very prevalent, as was very often the case among small herds and sometimes even among large ones (in one case, for instance, only 6 animals out of 134 reacted), it was of course easy enough to root out the infection completely.

By means of the numerous tuberculin tests which—especially during the first few years after the introduction of Bang's method —were applied to cattle in all parts of Denmark, *much valuable information was obtained as to the extent of tuberculosis in Denmark*, closely corresponding with the results obtained in all other countries where tuberculin was largely used. In many herds the disease was very prevalent. Among *large* herds (*i. e.*, herds numbering 50 or more animals), only few proved to be quite free

from tuberculosis. Among stocks of this size the average number of reacting animals was 50 or 60 per cent., while among *small* herds (numbering less than 50 animals), *a great number,* about one-fourth, were perfectly healthy, and the number of reacting animals in infected "small" stocks, was considerably less than that of the large ones, hardly 30 per cent.

The fact that a great many small stocks consist of none but healthy animals (in 1898 there were 2,203 stocks, numbering 30,101 animals, on an average 14 in each), clearly shows that the opinion, prevalent among many medical men, that tubercle bacilli are *ubiquitous,* is fallacious. They are never found except in places where animals (or human beings) discharging tubercle bacilli, live or have lately lived. Tuberculosis is a purely contagious disease.

This view is strikingly confirmed by a closer examination of herds, among which tuberculosis is found. Only such herds are perfectly healthy as are kept up by *breeding,* receiving hardly any increase from outside, except a calf now and then, *while the prevalence of tuberculosis is generally the greater the more frequently the stock is increased by buying cattle at fairs,* and consequently the most infected parts of the country are those where a brisk trade in cattle is being done and where buying and selling of cattle is common.

Another way by which infection may be introduced among hitherto healthy stocks is by feeding calves on *skimmed milk* from a co-operative dairy, amongst whose suppliers will always be found owners of tuberculous cattle. In cases where the infection had been introduced through the milk, the cows were very often healthy, while it was the calves or the young cattle that reacted; sometimes the peculiar fact might be observed that only animals of the same age, for instance, yearlings or two-year-olds reacted, and when this happened, the heating apparatus of the dairy was found to have been out of order just at the time when milk was supplied to the set of animals that had reacted.

In all other cases the tuberculin test proved conclusively *that tuberculosis is more prevalent among old than among young*

cattle. A close examination of 40,624 head of cattle, which during the years of 1898-1904 where subjected to the tuberculin test *for the first time,* showed that of calves under 6 months 12.1 per cent. reacted, of yearlings (from 6 to 18 months) 27.5 per cent., of two-year-olds (from 1½ to 2½) 38.6 per cent., of full-grown anima's (from 2½ to 5) 44.9 per cent., and of animals over 5 years old 48 per cent., figures which correspond with the results of tuberculin tests in other countries, as well as with the experiences of slaughter-houses and with the results of the study of human tuberculosis.

The *method* recommended by Bang *for enabling cattle farmers to combat tuberculosis by their own efforts, i. e.,* strict *isolation* of the healthy animals and feeding calves on uninfected milk [milk of perfectly healthy animals or milk heated to 85° C. (now only 80° C.)], had at first many enthusiastic followers, as will be seen by the following tables:

	Stocks.		Number of animals tested		Percentage of reacting animals
	Total Number	Number of stocks tested the first time	Total Number	Of these reacted	
April 1893—June 1894	327	327	8401	3362	40.0
June 1894—October 1895	1873	1645	44902	17303	38.5
October 1895—May 1896	930	749	20791	6622	31.9
May 1896—June 1897	7316	3012	24897	21668	25.5
June 1897—May 1898		2165	65788	15642	23.8
May 1898—January 1899	1454	618	35533	7725	21.7
1899	1293	543	33568	6759	20.1
1900	1101	417	26078	4976	18.0
1901	695	259	18818	2857	15.2
1902	895	396	23347	3531	15.1
1903	646	213	19364	2875	14.8
1904	738	277	23164	3750	16.2
1905	705	221	24161	3370	13.9
1906	689	294	25035	3398	13.6
1907	580	232	22982	2252	9.8

After a few years, however, there was a sad falling off. The carrying out of the above measures demands great vigilance and perseverance on the part of farmers as well as on that of their servants, qualities not often met with! The importance of strict isolation was not at first realized by all, the watchfulness was often relaxed, the disinfection of the stables was not always as thorough as it should have been, the milk was not always sufficiently heated. Many farmers thought the method too *troublesome* in the long run. If accidents happened so that too many animals of the healthy division reacted on the repetition of the test, the farmer would lose courage and listen to the many voices (especially those of butchers and cattle dealers), eager to assure him that the tuberculin test was mere humbug. The serious misuse of *tuberculin* in employing it for the *immunization* of *cattle intended* for *export* to Germany for *killing purposes*—these animals, according to the peculiar German regulations, are to be subjected to the tuberculin test in passing quarantine at the German frontier—contributed greatly to the dissemination of wrong ideas among the public. The well-known and unfortunate circumstance that highly tuberculous and consequently infectious animals sometimes do not react at all or only very slightly, must also be taken into account, veterinary surgeons sometimes neglecting to subject the non-reacting animals to a sufficiently careful clinical examination, so that it sometimes happened that a specially infectious animal was placed among the healthy ones.

However, although there was a great falling off, many farmers have persevered and most of them—both owners of large and of small stocks—have obtained excellent results. For instance, on the first application of the test in 1894 at the farm of Borupgaard in Jutland, 139 out of the total number (82 per cent. of the full-grown animals) reacted and only 86 were found to be healthy. When the test was applied at the same farm in 1908, out of 245 animals only *one* calf reacted and so slightly that the reaction must be considered doubtful. This excellent result had been attained by *strict isolation* (division of the large stable by

a wooden partition and separate stables for calves and young cattle). According to the careful calculations of the owner of the farm, the total expense of the isolation was about 1,000 Kr.

When the test was first applied in 1896 at Count Wedell's estate, Wedellsborg (Funen), 166 of the animals reacted and only 74 were found to be healthy. Now there is a stock of 264 head of cattle, of which only 3 reacted in 1908. In this case the division of the stable had been effected by means of a brick wall. Although during the first few years very few of the animals did not pass the half-yearly tests, the result was now and then rather bad, as when on one occasion as many as 22 per cent. reacted, which discouraged the owner of the estate so much that he very nearly gave up the whole thing. Fortunately, however, he persevered, and eventually reaped the reward of his exertions.

A well-known cattle breeder, Mr. Ahlmann of Langholt and Striben (Jutland), had, in 1895, 271 reacting and 68 healthy animals. At present the reacting division has been reduced to 10, while of the remaining stock on his two farms only 6 out of 373 animals reacted at the last test. Mr. E. Tutein of Edelgave (Sealand), had, in 1895, 115 reacting animals and 48 healthy ones; the last time the test was applied, only 2 out of 158 reacted. As early as 1899 Bang in the report submitted by him to the veterinary congress of Baden-Baden (Congress Report, vol. I., p. 541), expressed his opinion that the best way of rooting out tuberculosis in a large stock among which the disease had long been prevalent, would be to subject at first only calves and young cattle and none of the full-grown animals to the test, as experience had shown that among such a stock 80 per cent. or more of the full-grown animals would react. Consequently only very little would be gained by isolating the 10 or 20 per cent. of non-reacting cows, as a great number of these animals, having for a long time been exposed to infection, would turn out to be infected, even if they did not react. Not a few of such cows will be found to have in some of the lymphatic glands small tubercles of long standing, encysted, it is true, and consequently harmless

but still in some cases liable to break out again. By not subjecting the full-grown animals of their stock to the test, farmers would avoid the unpleasantness of learning (and of having to tell their friends!) that the greater part of their stock was infected, and the task of isolation would be the easier at first.

It is really beyond comprehension that every great cattle farmer, who is the owner of a valuable herd and *knows* it to be infected, does not take the simple precaution of *isolating his calves* from the full-grown animals of his stock and feeding them on *uninfected* milk, *i. e.,* milk that is sufficiently *heated* or milk from a few *perfectly healthy* (non-reacting and clinically examined) *cows.* In countries where the "artificial" feeding, which is common in Denmark, is unknown, a way out of the difficulty would be to make some perfectly healthy cows act as wet nurses and suckle the calves. Indeed, as has been proved by the Hungarian *Ujhelyi,* good results may be achieved, even if the mothers are allowed to nourish their own calves, provided the calves are kept in separate stables except when they are let in to their mother for feeding two or three times a day. This breaking away from the isolation rule involves, of course, some danger of infection; there is, however, a great difference between such a brief exposure to infection and constant cohabitation in the same stable day and night.

Of course the isolated calves should be subjected to half-yearly tuberculin tests so that the infected ones may be removed as soon as possible, and *the healthy stock which is being formed by the above measures should of course be kept continually apart from the old infected stock.* The *Ostertag* method of keeping the healthy animals isolated only as long as they are young and later stabling them together with the full-grown cattle, cannot by any means be recommended, as the infected stock, even though its sanitary condition may be *improved* by removing the most infectious animals by means of a careful *clinical control,* will never be so completely rid of animals that may transmit infection, as to obviate further danger. This cannot be attained by the clinical control alone.

For great landed proprietors, owners of *several* farms, it will be an easy matter to get rid of tuberculosis by sending all the healthy animals of their stock to one of their farms and gradually—by means of the above method—eliminating the infection from the herds of their other farms. The following account of how matters were managed at the farm of Ourupgaard and three other farms at Falster, belonging to Mr. Fr. Tesdorpf may serve as an instance to show how infection may be rooted out in this easy and cheap way. Here a beginning was made in 1893 by subjecting calves and young cattle of the stock of Ourupgaard, but no full-grown animals, to the tuberculin test, with the result that 31 reacted while 152 were found to be healthy. The healthy animals were strictly isolated first at Ourupgaard, in separate stables, later at two of the other farms. During the succeeding years the testing of this healthy stock of young animals, as also of the calves that were born, was continued. At first the result here, as at many other farms, was sometimes rather unsatisfactory, for instance in 1896, when 23 animals out of 361 reacted, but in time as the isolation was carried out more and more carefully, better results were obtained, until last year, when at the four farms belonging to Mr. Tesdorpf, only 11 animals out of 876 reacted. At one of the farms there is still a herd of 114 reacting (or non-tested) animals.

Just as good results have been obtained by Count Danneskjold-Samsoe at his three large farms in the island of Samso. Here, as early as in 1891, a beginning was made by testing the calves, of which relatively few reacted. The reacting animals were killed and the healthy calves and young cattle were kept isolated for some time, only, however, until the beginning of the calving season, which was certainly a great mistake (one that could not be prevented, the test being a private one). They were then placed in the large, well appointed stable together with the non-tested cows, which, though apparently healthy, infected the others, so that when at length Bang, in 1898, prevailed upon Count Danneskjold-Samsoe to have the whole stock, which dur-

ing six or seven years had been continually recruited with absolutely healthy young animals, subjected to the test, 286 animals reacted, while only 29 were found to be healthy! From that time the healthy animals were kept isolated at two of the other farms. In 1901 there were at one of these farms 208 animals which all passed the test and at another 126, four of which reacted. In December, 1907, there were in the healthy division 593 animals, of which two reacted, though doubtfully, on being subjected to the test. In addition there was still at one of the farms a reacting division of about 30 cows. So the great task of changing a large tuberculous stock into an all but healthy one by breeding had been accomplished in 10 years, an excellent result indeed!

Excellent results may also be obtained by isolation at *one* farm as will be seen by the two following instances. In 1896 Farmer Langermann of Faurholm had 45 calves subjected to the test, 15 of which reacted. From that time until now, the calves bred at the farm have been tested and kept isolated, while the full-grown animals of the stock were not tested at first. That they were highly tuberculous was proved by the fact that 19 of the apparently healthiest cows reacted on their being subjected in 1900 to the test as an experiment. Gradually a perfectly healthy stock has been bred, numbering—in April, 1908—197 animals, *none* of which reacted when tested.

At the large estate of Voergaard in Jutland (belonging to Mr. Scavenius), the same method of leaving the full-grown animals untested at first was adopted. In 1895, 94 yearlings and two-year-olds were tested, half of which reacted. The result of continued isolation of the calves and the young cattle and repeated tuberculin tests (of the calves twice yearly, of the older animals only once) is that there were in 1907 healthy divisions numbering 443 animals of which only 9 reacted upon the application of the test, and a reacting division of 41 animals. The manager of the cattle farm was much struck by the gratifying fact that *the cows live much longer now than at the time when tuberculosis*

was prevalent among them, a fact that is of course of the greatest importance as regards the profits of cattle farming, and which is generally taken too little into account.

It is by no means only at the large farms that excellent results have been obtained by the method of isolation. It is indeed quite possible to carry it out at *the same farms as well.* The difficulty at these farms is, of course, to find two sets of stable hands to tend and milk the two divisions, but on the other hand there is the advantage that at a small farm nothing escapes notice and that the farmer can personally see to the execution of his orders. A small farmer, if he has only intelligence enough to grasp the main point, can, much more easily than a great landowner, take care that the transmission of infection is avoided. Generally it will not be necessary to have two sets of stable hands, if only the rule of tending and milking the healthy division *first* is strictly adhered to and if the hands change their boots or shoes, and—preferably—their overalls as well, on going from one division to another, and use different sets of implements in the two divisions.

It is a fact that the carrying out of the method of isolation has been attended with excellent results on many small farms. Where only few animals reacted, it was easy enough to get rid of the disease; but also in cases where almost the whole stock was infected, the *gradual* elimination was often successfully accomplished. It may here be mentioned that it repays one's trouble to work for small farmers, men who have felt their economic existence threatened by the prevalence of tuberculosis among their cattle. These men are deeply impressed with the importance of getting rid of the disease and so take more care in performing their daily duties to avoid the transmission of infection than do most others.

The result of a computation made by Bang in 1905, was that at 66 small farms, of which the average number of stock was 29 head of cattle, a gradual changing of what were for the most part highly tuberculous herds into healthy ones had been successfully accomplished by the method of isolation. When this work was

begun the total number of reacting animals on these 66 farms was 1,045, and of healthy ones 780; when it was finished there were 1,896 healthy animals and *none* reacting. On being asked, several of these farmers told Mr. Bang that the work had certainly caused a good deal of trouble, but that the expense was nothing to speak of. Thus one farmer had by spending a sum of less than 200 Kr. on the establishment of two small provisional byres in one of his farmhouses, succeeded in changing his highly tuberculous stock (12 cows and heifers of which he had to sell for a mere song within a few years) into a perfectly healthy one, numbering 30 head of cattle—in 1907 there were 36—which have been several times subjected to the tuberculin test and have each time been found to be healthy. Other farmers have achieved similar excellent results at still smaller cost.

It will thus be seen that there is not the slightest doubt that both small and large cattle farmers may gradually change a tuberculous stock into a healthy one, if they are determined to do it and if they have quite grasped the nature and the modes of infection of tuberculosis.

N. O. Nielsen, veterinary surgeon (Remkolde near Vordingborg, Sealand), has had the good idea to persuade a great number of the small cattle farmers of his district to join an association with the object of "promoting the breeding and maintenance of healthy, non-tuberculous stocks of cattle and pigs." Only such farmers are allowed to join who have had their stocks subjected to the tuberculin tests and, in case of its proving only *partially* healthy, have suitably isolated the healthy animals from the diseased ones. No increase of the stock by animals of other stock except calves under one month is allowed, unless they come from a healthy stock and have been found healthy on being injected with tuberculin. The object of the association is, besides setting a good example, to facilitate the purchase of healthy animals, as members who want to buy or sell may apply for advice to one amongst them, who keeps a list of the farms where healthy animals are for sale. To some of the members is delegated the task

of superintending the heating of milk at the dairies. Members pay a subscription of 2 Kr. yearly.

The association was started in December, 1905, and has prospered so much that it has now 125 members possessing stock amounting to 2,740 cows and young cattle. [According to a report dated January 1, 1908, 2,070 of the 2,442 animals of the association were healthy and only 14 of the members had reacting (isolated) animals, 372 in all.] Within three years the task of rooting out tuberculosis from 25 stocks of cattle has been accomplished by means of killing or selling the reacting animals. (On the first application of the test 85 stocks—most of them very small, it is true—were found to be healthy.) More than half of the cattle of the four parishes—the scene of the labors of the association—belongs to members. There is no doubt that such association may do much towards rousing an interest in small farmers in the great problem: How to breed healthy cattle and pigs. "Union is Strength," may be more truly said of Denmark, where so much is achieved by *co-operative farming*, than of any other country.

The growing interest in the rational application of the tuberculin test and the method of isolation has—in addition to the founding of the above association—manifested itself lately in another way.

During the last seven or eight years several thousand head of *Jersey cattle* have been imported into Denmark direct from the island of Jersey. These cattle, as well as all other cattle that are imported for breeding purposes, must undergo a brief quarantine detention and are subjected to the tuberculin test (in accordance with the Act of February 5, 1904, relating to the Combating of Tuberculosis among Cattle and Pigs). This has further corroborated the truth of the already well-known fact—that tuberculosis is all but unknown among the Jersey cattle, an interesting circumstance which is accounted for by the fact that the Jersey stock has been kept pure for more than 100 years, the importing of cattle, except for immediate slaughter, being prohibited, prob-

ably to prevent the introduction of rinderpest. Of the Jersey cattle mported into Denmark, only very few animals reacted on being subjected to the test, and when these animals were killed, it was either quite impossible to demonstrate the presence of tuberculosis (accidental fever) or it was found to be present in a very slight degree only (perhaps caused through human infection?). On being placed among infected Danish cattle, healthy Jersey cows will very soon become tuberculous; sometimes even they have been known to give way to the disease quicker than Danish cattle. The man who first imported Jersey cattle and who is the most eager advocate of the introduction of this excellent breed, which, owing to its wonderfully rich milk, is of special value to a butter-producing country, viz., Mr. J. Larsen (Gaardbogaard), was fortunately also a very eager advocate of the use of tuberculin and has always taken good care to keep his stock free from tuberculosis. Consequently it has been easy for him to induce the majority of the cattle farmers who import Jersey cattle to keep their newly imported animals free from the disease by means of isolation. There are at present about 5,000 head of Jersey cattle in Denmark—on small as well as on large farms—most of which are either quite free from tuberculosis or successful efforts are being made to make them so. At many of these farms the stock is composed exclusively of Jersey cattle, at some the breed is mixed.

The foregoing is chiefly an account of what is being done in Denmark *to combat tuberculosis among cattle by the cattle farmers*, assisted by the state, *which pays the expenses attendant on the tuberculin tests* on condition the farmers bind themselves to keep the healthy animals safely isolated from the infected ones. In conclusion follows an account of the two *measures* with the same object (*as passed by the Legislature*):

The amendment in 1898 of the Tuberculosis Act of 1893 provides that *all cows found suffering from tuberculosis of the udder* are to be killed and that a partial *compensation* is to be paid to the owner by the state; further that all *skimmed milk* and

butter milk returned from dairies to be used as food for calves and pigs is previously *to be heated to* 85° *C.* In 1904 an amendment was added providing that the compensation for a cow, killed on account of tuberculosis of the udder, is to be increased a little, so as to represent one-third the market value of the carcass, calculated at the current average price for meat of inferior quality if the meat is declared by a veterinary surgeon to be fit for human consumption (which happens very rarely), and five-sixths *of the market value of the carcass* if the meat is condemned. By an amendment of the provisions relating to *the heating of the milk* it was provided that the milk is now to be heated to 80° C. instead of to 85°C., and that this provision is also to apply to *cream, destined for the making of butter for exportation.* The object of this later provision, which has, of course, in itself nothing to do with the endeavors to combat the prevalence of tuberculosis among domestic animals in Denmark, is to keep Danish butter free from viable tubercle bacilli. It cannot be said to have revolutionized the dairy work to any great extent, as the heating of buttermilk has always been performed indirectly by heating the cream. Long before 1898 it was common enough to heat the cream very considerably in order to insure the perfect purity of the butter. There is no doubt that the usual heating of the cream and the adding of cultures of acidifying bacteria before the churning has contributed much to the practically invariably superior quality of Danish butter.

The object of the killing of cows suffering from *tuberculosis of the udder* is to get rid as soon as possible of these animals, through which, more than through any others, infection may be spread to calves, pigs and other domestic animals and also, undoubtedly, to human beings, especially children, if the milk is taken raw. The endeavors to combat tuberculosis of the udder have met with great sympathy among Danish farmers. About 2,500 samples of milk of cows, suspected of suffering from this form of tuberculosis, are sent in yearly through veterinary surgeons to the laboratory of Dr. Bang, and the microscopic ex-

amination of these samples, either of the particles, produced by exudation or—in case of the milk being unchanged—of the sediment after centrifugation showed tubercle bacilli to be present in about 30 per cent of the cases. After the killing of the cow parts of the diseased udder are subjected to examination in order to ascertain the correctness of the diagnosis, which in only about one per cent. of the cases has turned out to be at fault. About 700 cows are killed every year and the compensation paid for them generally amounts to 50,000 Kr. yearly.

The object of the killing of cows suffering from tuberculosis of the udder is of course best attained if the case is established when still at an *early stage*. The fact is therefore worth mentioning that of the 6,228 cows suffering from tuberculosis of the udder, destroyed in Denmark in the course of ten years, 2,149, or 34.5 per cent. were still at a very early stage of the disease, as the secretion of the diseased gland still had the appearance of natural or almost natural milk. In many other cases also the rooting out of these infectious animals has had great hygienic importance, as cows suffering from tuberculosis of the udder may often go on living for months after their milk has changed, and even though at this stage the milk is not generally mixed with uninfected milk, it still contributes to spread infection in the stable by being milked on the floor.

The compulsory slaughter of these animals is therefore indubitably justified, but much more ought to be done. The best thing would be to order all cows, suffering from "open tuberculosis," *i. e.*, all which discharge tubercle bacilli through any of the excretory ducts, to be destroyed to the owner and partial compensation granted. Should the authorities hesitate for the present from acting upon this recommendation—partly because of the expense, partly because it may be rather difficult in some cases to decide whether a coughing cow is suffering from pulmonary tuberculosis, especially of an ulcerative, infectious form—there is at any rate *one* form of tuberculosis, which is extremely easy to diagnose, as the presence of the bacilli may be proved directly,

viz., *tuberculosis of the uterus.* This disease, which seems to be even more frequent than tuberculosis of the udder, is most infectious; not only are enormous masses of tubercle bacilli every day spread in the stable through the discharge from the vagina, but a great number are no doubt mixed with the milk during the milking. It is six years since the veterinary authorities of Denmark recommended that the same action should be taken with regard to cows suffering from this disease as with cows suffering from tuberculosis of the udder, but up to the present day their advice has been disregarded.

The most important of all the measures against tuberculosis among cattle and pigs which have been carried out in Denmark is the law relating to *the heating of skimmed milk and buttermilk* to 80° C. before it is returned from the dairies. As in Denmark nearly all milk not sold directly for consumption is sent to co-operative dairies, it is clear that there is very great danger of a wide dissemination of tuberculosis, if *raw* skimmed milk and buttermilk are returned to the suppliers to be used as food for calves and pigs. There will always among suppliers of a dairy be one or more farmers who have a highly tuberculous stock, one or more cows of which yield in the course of the year great quantities of infected milk, and so, by employing this milk, after it has been skimmed, to feed other stocks, the infection is spread to hitherto healthy herds. As mentioned above, this was formerly done on a large scale, and there is no doubt that most stocks of cattle and pigs in Denmark would gradually be infected in this way, if measures had not been taken to prevent it. Of course the heating of the whey ought to have been enforced by law as well; this was proposed, but the proposal was not accepted, chiefly because the heating of the whey is rather troublesome. It is, however, to be hoped that this measure will be carried out some day, though, as whey is mostly used for feeding pigs, it is not so important as the other dairy products, as regards *bovine tuberculosis,* and, besides, cheese making is not nearly so considerable in Denmark as butter making.

In Denmark the observance of the law regulating the heating of skimmed milk is controlled by the police as well as by the margarine and butter inspectors, who procure samples at the dairies and send them to the laboratory of Prof. Storch, where they are subjected to his color test, which consists of pouring a few drops of *paraphenylen-diamin* and peroxide of hydrogen into the milk. The milk turns blue if it has not been heated to 80° C. Offenders against the act are fined. On the whole the regulations governing the heating of milk are fairly scrupulously carried out, though, of course, there are exceptions. The best plan would be for one or two of the suppliers of each dairy to apply the above easy and simple test every day. This is done in some places and has produced very good results.

One useful provision of the Tuberculosis Act is that the sediment, deposited on the sides of the cream separator, is to be burned, which is no doubt always done now. In old days this product was now and then used as food for pigs, and thus many pigs were infected, as it contains enormous masses of tubercle bacilli which are separated from the milk by the centrifugal force.

Act of February 5, 1904, Containing Measures Against Tuberculosis Among Cattle and Pigs.

A sum of 100,000 Kr. granted every year by the Rigsdag (Parliament) on the recommendation of the Committee of Ways and Means, shall be placed at the disposal of the Minister of Agriculture for the support of cattle farmers, who wish to employ tuberculin as a diagnostic remedy in combating tuberculosis among their cattle, the tuberculin test being applied according to detailed regulations issued by the Minister. The support shall be granted to none but such farmers as guarantee their ability to keep the animals, proved by the test to be healthy, safely isolated from the animals affected by tuberculosis, or which have not been subjected to the tuberculin test.

"The Minister of Agriculture shall—on the same conditions—be entitled to employ part of the sum to support cattle breed-

ing associations which wish to subject the animals selected for breeding purposes to the tuberculin test as well as to support farmers' associations desiring to subject cows belonging to cottagers to the tuberculin test."

Farmers who do not fulfill their obligations with regard to isolation shall return to the state the grants which have been made to them in accordance with the above provisions.

Any veterinary surgeon superintending the application of the tuberculin test on a farm shall satisfy himself under penalty of a fine that safe isolation between the animals is established and if his orders to this effect are not obeyed by the farmer, he shall notify this to the chief veterinary surgeon of the country.

"Applications from cattle farmers, cattle-breeding associations and farmers' associations desiring to take advantage of the opportunity offered to them by this Act of having their cattle subjected to the tuberculin test, shall be sent direct to the Minister of Agriculture."

SECTION 2.

Importation of live cattle from abroad shall only take place at such places as are mentioned in the regulations issued by the Minister of Agriculture. Immediately after their arrival the animals shall be quarantined and shall in accordance with the regulations of the veterinary police be subjected to the tuberculin test, according to regulations issued by the Minister of Agriculture, within five days after their arrival at the quarantine stable. After the test the non-reacting animals shall be left at the disposal of the owner while the reacting animals shall either be returned or taken direct to a public slaughter house or to a slaughter house recognized by the Minister of Agriculture, where same shall be destroyed under control of the veterinary police.

The expenses incurred in providing the requisite quarantine stables at the places of import as well as the expenses of the tuberculin test—but none of the expenses attendant on the other measures mentioned in this section—shall be borne by the state.

"The regulations relating to tuberculin tests, mentioned in section 1, shall also apply to such other diagnostic remedies as may be recommended by veterinary authorities for the combating of tuberculosis among cattle and are approved by the Minister of Agriculture."

SECTION 3.

Animals imported for killing purposes may be exempted from quarantining and the tuberculin tests ordered in section 2.

"Such animals shall—after having been branded (see section 4)—be taken direct to a public slaughter house or to a slaughter house recognized by the Minister of Agriculture.

"The Minister of Agriculture shall be entitled to permit cattle imported for killing purposes—after having been marked—being taken direct to a cattle market, where the animals shall be stabled so as to be—in the opinion of the veterinary police—duly isolated from all other cattle. From this place they shall be taken direct to a public slaughter house or to a slaughter house recognized by the Minister of Agriculture."

The animal imported for killing purposes mentioned in this section shall be killed within ten days after their arrival in this country.

SECTION 4.

"The Minister of Agriculture shall issue regulations for the marking of the imported animals."

SECTION 5.

Cows suffering from *tuberculosis of the udder* shall be killed in accordance with the regulations of the state under control of the veterinary police or in a public slaughter house. The owner shall be entitled to a compensation for the animal amounting to one-third of the market value of the carcass, calculated at the current price, according to regulations issued by the Minister of Agriculture. The owner shall further be entitled to a compensation for such parts of the animal as are declared by the

veterinary surgeon to be unfit for human consumption, amounting to half of the value of the condemned meat, calculated as above. Such parts of the animal as are declared fit for human consumption shall be left at the disposal of the owner.

The compensation as well as the expenses attendant on the killing shall be paid by the state.

SECTION 6.

None but such milk and buttermilk as has been heated to a temperature of at least 64° Reamur (80° C.) shall be returned from dairies to serve as food for cattle and pigs. Exceptions from this rule may take place when the heating cannot be performed on account of an accident, which fact shall be made known to the person to whom the milk is to be returned.

The heating mentioned in this section shall also apply to all cream destined for the making of butter for exportation.

The sediment scraped off the sides of the cream separator during the cleaning of the same shall be burned.

SECTION 7.

"None but such milk and buttermilk as has been sufficiently proved in the opinion of the Minister of Agriculture to have been heated to a temperature of at least 64° Reamur (80° C.) shall be imported from abroad. The Minister of Agriculture shall, however, be entitled to grant exemption from the above prohibition when special circumstances necessitate it."

SECTION 8.

The carrying out of the provisions of this act shall be enforced by the veterinary police, the custom-house officers and the butter and margarine inspectors in accordance with the directions of the Minister of Agriculture.

SECTION 9.

Offenders against the provisions of sections 1, 2, 3, 6 and 7 shall be liable to fines of from 10 to 20 Kr. for the first offense,

in case of repetition to fines of from 20 to 200 Kr. Repeated offences against section 6 shall not be looked upon as such if at least one year has elapsed since the offender was last fined. The fines shall accrue to the exchequer. The proceedings in these cases shall be summary. In the case mentioned in section 7 the prohibited articles shall be confiscated and heated to the temperature defined in the above section. In Copenhagen the proceeds of the sale of such articles shall accrue to the municipal fund, in other places to the poor fund.

SECTION 10.

This act, which shall not apply to the Faroe Islands, shall come into force October 1, 1904.

IN North Dakota the state allows no compensation whatever to owners who suffer loss occasioned by bovine tuberculosis, yet a law has been passed there providing for state aid in the case of glandered horses.

THE GRIM REAPER.—Death has been uncommonly busy during the past year. Old Sam Garlick passed in his checks last week, aged eighty-three; Aunt Peggy Skinner skipped the gutter at sixty, and Jake Spooner's stump-tailed bull died a lingering death of hollow horn. Thus passeth away mankind and youth in its very prime.—(*Tripoli Leader, Ia.*)

A NEBRASKA WEDDING.—A beautiful wedding took place early in October at the home of Mr. James Ely, Auburn, Nebr., when his charming daughter, Miss Alice Ely, was united in marriage to H. L. Feistner, D.V.S. Both Dr. Feistner and his bride are natives of Nebraska. We quote from an Auburn, Nebr., paper: "Dr. Feistner is a veterinary surgeon by profession and there is not another young man in the city who possesses a more sterling character than he. Sincere in all his beliefs, loyal to what he thinks is right, self-respecting in the largest sense of the word, with scrupulous regard for integrity, he has in him the elements which will make him a highly successful man, and one who will have the respect of all of his fellows." The REVIEW congratulates Dr. and Mrs. Feistner, wishing them long life and much happiness.

IMPORTANT RELATION OF THE VETERINARIAN TO PUBLIC HEALTH.*

By Fred. J. Mayer, M. D., Special Medical Inspector Louisiana State Board of Health, Secretary Louisiana State Sanitary Association.

In the State of Louisiana, outside of New Orleans, not many years ago, the veterinarian was an unknown quantity; horse doctors galore infested every community who, for a song, yea, verily, too often without a note of warning, armed with a general utility barlow blade, reeking with microbian filth, would scrape the buccal mucous membrane of one's favorite steed to cure the botts, deliver a sledge hammer blow on a plank laid over the poll of your Arabian for cerebral congestion, trephine the forehead with a common wood auger or tenpenny nail driven home for blind staggers; saw off the tail of the dove-eyed Jersey for hollow horn; instantaneously relieve glanders by forced inhalation of the fumes of burning feathers, filthy rags or noxious, malodorous weeds; infallibly cure anthrax by inunction, incantations, bleeding or cruel, crucial incisions in the tumors; stop tetanus by counter irritants, stuffing the wound with burnt wool and drenching with cockroach tea; and as a general alterative and tonic, or for kidney troubles, weak back, sore eyes or blindness, or as a last resort, when other procedure, medical or surgical, had failed, they would cut out the hooks and with a germ-infected blade remove the nictitans membrane which nature provides the horse in lieu of hands to cleanse the eye of foreign bodies; in view of all these barbarous practices, is it a wonder that this correlated branch of medicine and comparative anatomy fell into disrepute, and that the horse doctor had no status in medical and scientific circles. But a great change has come about; how great the change is manifested by the passage of Act 22 of 1908, regulating veterinary practice. Section 15 prescribes:

*Read before the American Veterinary Medical Association, Philadelphia, 1908.

"That any person who practices or attempts to practice veterinary medicine or veterinary surgery in this state without having first complied with the provisions of this act shall, for each and every instance of such practice be guilty of a misdemeanor, and on conviction thereof be fined in the sum of not less than $25 nor more than $100 or imprisonment for not less than one month nor more than six months, or both, at the discretion of the court, and any person filing or attempting to file as his own a license of another, or a forged affidavit of identification, shall be guilty of a felony and upon conviction thereof shall be subject to the punishment prescribed by law for the crime of forgery. All fines for offense under this act shall be paid over to the Board of Veterinary Medical Examiners to constitute a part of the fund of said board."

"Section 18. Be it further enacted, That the Grand Jury of each parish in this state is hereby given inquisitorial power over all offenses against or violations of this act, and the judges of the State District Courts shall give the same in their charges to the Grand Juries, and it shall be the duty of the Board of Veterinary Medical Examiners or any member thereof to report any violation of this act to the proper authorities."

And Act 274 of 1908:

"An Act to encourage the breeding of live stock; to create and established the Louisiana Live Stock Sanitary Board, specifying who shall constitute the same and how they shall be appointed; fixing compensation for the service of members, delegating powers and authority for regulating live stock sanitary matters and the right to establish and maintain quarantine lines, prevent the introduction and spread of Texas and tick fever or any of the infectious or contagious diseases of live stock; appoint officers and inspectors for the enforcement of regulations, and to fix their compensation; to prescribe their qualifications, powers and duties and to prescribe penalties for the violation of this act; to provide a sufficient appropriation to carry this act into effect."

The final passage of these acts show that the people are awakening to the difference between the educated veterinarian

and the horse quack, and to no one factor or collection thereof is this more attributable than to the ethical teachings by precept and example of your learned president, who as Professor of Comparative Medicine in the State Agricultural College, as Agricultural Editor of the New Orleans *Picayune,* as ofttimes conductor and lecturer to Farmers' Institutes, he has won the distinction by universal consent of being called State Veterinarian, and as such consulted by municipalities and parishes, although no such office exists in law; but he has done more, as President of the State Sanitary Association, as honorary member of the State Medical Society, as one of the original protagonists of the Louisiana System of Hygienic Education, he has raised the veterinarian above his honorable calling to a still higher plane—that of the sanitarian.

For too many centuries the reproach has lain against practitioners of medicine, whether among men or the lower animals, epitomized in the lines of the caustic poet:

> "Some fell by laudanum and some by steel
> And death in ambush lay in every pill;
> The piercing caustics ply their spiteful power,
> Emetics wrench and keen cathartics scour;
> The deadly drugs in double doses fly
> And pestles beat a martial symphony."

A wholesome reaction has set in, in both branches of medicine, and polypharmacy is giving way to drugs administered for certain physiological effects, to serum-therapy and other measures to strengthen or increase the phagocytic resistance to pathogenesis and to measures of prevention. Who in medicine to-day would think of combating tetanus in man or horse without resorting to the prophylactic use of anti-tetanic serum? In the cholera of both man and the hog, the immunizing value of vaccine virus, while yet in the experimental stage, holds forth some promise, indeed in the latter recent reports are gratifying in a lessened mortality; but it is not alone as an advocate of preventive medicine in veterinary practice that your attention is

asked but to the "Relation of the Veterinarian to Public Health," and that his *first duty* and *highest function,* like that of the physician, is to *protect the public health,* by bringing to bear the modern teachings of veterinary sanitary science to the suppression and prevention of disease common to man and the lower animals.

This newly recognized responsibility *raises the veterinarian to full fellowship with his medical brother,* for no medical man is better equipped than the comparative anatomist and physiologist to teach and practice those preventive measures for the suppression of contagious and infectious ills that depend on the lower animal kingdom for their transmission to man, or that are intercommunicable.

A Post-Graduate Institute of Comparative Medicine.

May I be pardoned the temerity of expressing the hope that this great international organization will take the initiative in establishing a post-graduate school or Institute of Comparative Medicine devoted to the study of those diseases common to man and the lower animals, and to the relation of insects to disease in both, where medical men and veterinarians may take a course, which neither should neglect; and that the university extension feature pursuant to the Louisiana System of Hygienic Education be added thereto and made its capstone. This system is based on the principles that: "Life is not mere living, but the enjoyment of health;" that "The sanitary safety of the republic is the supreme law;" that education must precede sanitary legislation to make the latter effective; that, having an inalienable constitutional right to life, liberty and the pursuit of happiness, all of which are inseparably connected with the sound mind in a sound body, it is the highest duty of the state to furnish this instruction to the masses; that this instruction can best be conveyed by the Louisiana System which correlates and coordinates all educational factors, medical, veterinary, legal, pedagogical and clerical, and focuses them on the supreme duty and effort of enlightening the masses in the cause and prevention of

communicable diseases, and most especially of those common to man and the lower animals or that are conveyed by insects, this being accomplished by a course of illustrated public lectures, before colleges, high schools, agricultural, pedagogical institutes; before legal, clerical, press and other conventions, and by special popular institutes of hygiene, by correspondence, sanitary catechisms and hygienic sermons. This scheme of hygienic education, never carried out in its entirety, was tentatively tested in Louisiana in the early eighties, passed the experimental stage successfully in the nineties, and in 1905-6 converted an entire people, black and white, to the mosquito doctrine of yellow fever transmission, so that to-day the bronzed dragon of death no longer stands as a menace to the commercial advancement of the state.

The intelligent application of the principles of this scheme of education to the larger problems involved in other communicable diseases, will have the same effect in removing the annual blight that falls upon the home and farm. But is there any crying necessity for such an Institute of Comparative Medicine? Does a high humanitarianism plead for it, or does public economy demand it? Are physicians and veterinarians sufficiently posted in comparative medicine to preclude the necessity for its establishment? One fact alone would warrant its founding, and that is that there are still some who, wrapping the mantle of the great Koch about them, insistently deny the possibility of the intercommunicability of human and bovine tuberculosis.

A brief allusion to some of the other diseases common to man and the lower animals will add strength to the argument in favor of its establishment, permit me then "to tell you that, which you yourselves do know."

ACTINOMYCOSIS.—How many modern specialists in medicine or even the all-round, well-posted general practitioner would recognize a case of *actinomycosis* in the family cow, and trace a connection to some case that had baffled his skill, and yet the sporogenous *Actinomyces bovis* (ray fungus) is perceptible to the

naked eye in the pus and secretions of those infected, and the disease is common to both man and the domestic animals, the infection entering through mouth or nose, wounds, decayed teeth or infected food; while its intercommunicability has not been proven, it is generally recognized that barley, oats or rye serve as a vehicle for the fungus. Crookshank has pointed out its long and frequent unrecognized existence in England.

ANTHRAX.—How frequently in both man and the lower animals has the sporogenous *Bacterium anthracis* (Charbon) found entry through wounds, abrasions, etc., in skinning charbonous carcasses, or in eating their meat or drinking infected milk, or in sorting wool of charbonous sheep, or eating foodstuffs contaminated by infected flies or grown on infected pastures where earthworms brought up the spores, as pointed out by Pasteur, and more recently confirmed by Bollinger, or by being bitten by infected flies or mosquitoes. One would suppose that a disease known to Moses and described by Homer, and probably the first disease in which the agency of bacteria was indicated by Pollender (1849), Davaine (1863) and Koch (1876), would have attracted more general attention, for its suppression by physicians and lawgivers, on the Gulf littoral of Louisiana, where some of the finest grazing savannahs in the world have in many instances been made unfit for stock raising because of the willful, wanton and persistent neglect to cremate or deeply inter with sanitary precautions all infected litter and charbonous carcasses, the latter ofttimes dragged at the tail end of a cart over country roads probably infecting every foot of territory traversed, since the sporulation of the *Bacillus anthracis* takes place outside of the body, as it requires free oxygen; and then dumped where dogs, buzzards and flies serve as wide distributors of this resistent germ, entering new channels of infection, sometimes miles from the original focus of infection, carried on the feet or excreta of buzzards, or washed by creeks that traverse the infected area to pastures green and new.

Small wonder that the disease has caused an economic loss, in one year on a single plantation, enough to have established and endowed an Institute of Comparative Medicine in every parish where a focus of infection exists.

GLANDERS, caused by the non-sporogenous anaerobic *Bacillus mallei* found in the nasal secretions of glandered animals, and easily destroyed by boiling or bacillicides of ordinary strength, is another disease of animals (horses, asses) contracted by man through handling diseased horses or their trappings, the bacillus finding entry through wounds, abrasions or the mucous membrane of the nose, and yet how infrequent is the necessary disinfection practiced of the soiled discharges of those infected, even where the disease is recognized, and how often is destruction of all diseased animals postponed until the whole drove is infected; in the rural districts of Louisiana no effort is made to protect the infected from flies, mosquitoes or other insect carriers of bacteria, nor is mallein resorted to as a diagnostic test in epidemics of epizootic where a reasonable suspicion of glanders should exist.

BUBONIC PLAGUE.—The continued existence of the plague in South America, and its recent presence in California, is near enough to centres of rodent population in the United States for serious thought and active steps for the destruction of rats. The Indian Commission recently reported that "Bubonic plague in man is entirely dependent on the disease in the rat, being conveyed from rat to rat, and from rat to man by the rat flea; that these infectious fleas are frequently carried in clothing and baggage." More recently they quoted Verjbitski's doctoral thesis wherein, among other things, he has shown that all fleas and bugs which have sucked the blood of animals dying from plague, contain the *Bacillus pestis;* that their feces contain them as long as the *Bacilli pestis* are present in their intestines; that infected fleas communicate the disease for three days, and bugs for five days after infection; that the *Bacilli pestis* can remain virulent

for five months on infected textiles; that while the rat flea does not bite man, human fleas bite rats, and that fleas on dogs and cats bite both man and rats; that human fleas and fleas on cats and dogs can live on rats, which accounts for the infection of many children in India after playing with these domestic animals.

Dr. McCoy, M. H. S., has also observed leprosy in rats in San Francisco; add these sanitary dangers to the great economic loss inflicted by the rat, by what it eats and destroys, and the sanitary and economic necessity of exterminating them is apparent. The veterinary sanitarian by his greater knowledge of animal life than the medical sanitarian will find here a wide field for usefulness and civic duty, for he is the one the public will naturally turn to for information and advice on this subject in the event of plague visitation.

HYDROPHOBIA.—The unrecognized germ of which is conveyed to man by the bite of any animal infected, whether dog, wolf, horse or cat, is probably also conveyed by midges and flies (Nocard) and mosquitoes, and by the milk of the infected. Here is a disease recognized since the days of Aristotle, for which Pasteur provided a method of attenuating the virus resulting in an antitoxine vaccine for the protection of individuals, and yet only a small per cent. of those bitten ever receive the treatment, and many that do are too far gone to be benefited as free cauterization of the wound should have taken place within thirty minutes after being bitten, or by failure to note what Roux has pointed out that the saliva of a mad dog is virulent for three days before symptoms appear. Surely the combined influence of the medical and veterinary professions ought to force the passage of dog-muzzling ordinances in every community and the killing of ownerless dogs, the maudlin sentimentalist to the contrary notwithstanding.

SMALLPOX.—Over one hundred years have elapsed since Jenner gave us a prophylactic, the intelligent application of which has stamped out the disease in Germany so effectually that Niemeyer twenty-five years ago in substance said that it had lost

its significance there, and was only seen among barbarous people. The veterinary profession could aid in lifting this reproach and in breaking down the prejudice against vaccination, by installing a vaccine farm in every populous centre, giving the masses an opportunity of seeing how the vaccine is made and receiving the inoculation fresh from a healthy calf, as was once done in Lima by the Peruvian authorities in their successful effort in breaking down the unreasonable prejudice against it.

It seems almost a work of supererogation to call the attention of a profession that was the first to apply the tuberculin test to cattle and that pointed out the danger of milk from tuberculous cattle which causes such enormous loss in human life and money, for in the United States alone, twice as many souls died from tuberculosis in 1907 as died from yellow fever there in one hundred years, and the economic loss there has been conservatively estimated at 300 millions of dollars annually. It is assumed that the intercommunicability of human and bovine tuberculosis is accepted by you in spite of the statement of Koch, in 1901, that "human tuberculosis differs from bovine, and cannot be transmitted to cattle."

The researches and writings of Behring, McFaydean, Crookshank, Ravenel, Salmon, Smith, Mohler, Moore, Melvin, Cotton and Schroeder, and both the eminent British and German Commissions on Tuberculosis, have most convincingly negatived the conclusions of Koch and confirmed the early teachings of Villemin (1865) and Chauveau (1868) as to the intercommunicability of human and bovine tuberculosis. Behring's experiments proved its transference to man through the medium of tuberculous milk, and that a large per cent. of infants are infected in this way; his experiments on newborn foals, calves and guinea pigs proved that the baccilli could pass through the intestine into the blood current while later in the development of the mucous membrane, their passage was inhibited, and he concluded the same obtained in infants, which would account for the greater frequency of tuberculous infection in infancy. Since from five to seventy-five per

cent. of the dairy herds tested throughout this country respond to the tuberculin test, we have here unquestionably the chief source of tuberculotic infection in children. The Schneiders of Cruzot proved that in France, for in combating depraved milk and furnishing a wholesome quality, they reduced the infant mortality during the first year of life (the most dangerous period) from eighteen per cent., the average for all France, to nine per cent. in one year.

It is hardly an exaggeration to say that fifty per cent. of the infant mortality of Christendom is due to the ingestion of tuberculous milk, that the assertion of the Royal Commission (1895) that: "As regards man we must believe that any person who takes tuberculous matter into the body as food incurs some risk of acquiring tuberculous disease." The *Bacillus tuberculosis,* whether human, bovine, avian or ichthian, is probably the same, differing only in so far as the nature of its environment makes necessary for its existence, this difference being modified or changed when introduced into a new environment as by successive passages through different animals, even where the change is from avian to animal, or from mammalian to cold-blooded animals.

Milk, "the great uncooked food," is the vehicle of transmission of other diseases, *e. g.,* the *Bacillus diphtheriæ,* which has been found in the ulcers and milk of cows and proliferating in the raw milk after it is drawn. Hundreds of epidemics of scarlet fever have been traced to the milk supply, infected by being exposed to the sick or convalescent, or through bottles from the sickroom not properly sterilized.

Anthrax, as hereinbefore stated, has been conveyed by both the milk and meat, and yet the masses fear more the milk of cows that have been vaccinated, although the latter is entirely safe; as to meat, the wonder is the infection is not more general. A wealthy town in South Louisiana has an open market, daily cleaned by a flock of buzzards, whose beaks and feet laden with microbian filth convey the *Bacillus anthracis* to the cleaver's block.

MALTA FEVER has been traced to the milk of goats infected with the *Micrococcus melitensis* (Bruce), and so the list of milk-borne diseases could be extended, including cowpox, gastro-enteritis, milk sickness and the relation of the last to low, swampy areas, and the milk of cows suffering with puerperal sepsis, suppurative wounds or any condition likely to septically affect the milk supply, not to speak of typhoid fever and the many outbreaks traceable to the milk supply from cows drinking sewage-polluted water, or milked by typhoid convalescents, many of whom remain walking laboratories for the production of the *Bacillus typhosis,* or milk that has been received in cans washed in polluted water, or milk in which an infected fly has accidentally dropped, suffice it that milk from the time it leaves the cow until it reaches the consumer should be carefully guarded from infection, whether from diseased cows, or cows improperly housed or fed, or from cows in a tuberculous environment.

What a field for the philanthropy and labors of the veterinary sanitarian; as your profession first applied the tuberculin test to cattle, which is a reliable diagnostic in ninety-seven per cent. of cases when properly applied, and through the use of which we must in a measure be guided in eliminating tuberculosis from dairy herds, continue the good work and teach the multitude, for it is only through an enlightened public opinion that the sanitarian can hope to find that co-operation necessary to secure the enactment of sound sanitary laws covering the subject matter of this paper, and their execution when enacted. Every state should have an *Institute of Comparative Medicine,* whether it should be in connection with the state universities or the medical or veterinary colleges, or the Department of Agriculture, is not material, so the basic principle of the scheme is preserved—the education of the masses. In a city like New Orleans, whose geographical position entitles it to be the *entrepot* of the Mississippi Valley, Latin-American and Oriental trade, it should be in connection with a great veterinary school, the establishment of which would be more than self-supporting; first, by reason of its

proximity to Latin-America, from which source it could draw matriculants; second, because of semi-tropical conditions there, it would afford the exporting interests unrivaled opportunities of studying tropical diseases in horses, mules and horned cattle, and give a tremendous impetus to stock raising in the South. The Gulf littoral could supply the tropical world with a grade of medium sized, wiry mules, suitable for agricultural and war purposes and better able to stand continuous work and strain in the tropics than the Northern breeds, but the successful pursuit of this occupation is contingent on the knowledge to be obtained in a veterinary institute.

But the humanitarian overshadows the economic; the great question of the hour is, Shall we in the light of present knowledge, and ability to do so, limit the encroachment of that great white plague that annually cuts down, in our own country, and in the flower of life, one-fifth of a million of human souls, and many at an age of greatest productivity and usefulness, and consigns them to the scrap pile of oblivion? A part of the responsibility of prevention rests on your profession, hence the "important relation of the veterinarian to public health."

FIFTY-EIGHT cases of typhoid fever occurred from milk furnished to sixty-nine families from a dairy in which an attendant had typhoid. The attendant, though ill, milked the cows and attended his sick wife, who also had typhoid. The excrements were emptied in an open cesspool where millions of flies gathered. This is an instance in which Denver finds herself, and the veterinary fraternity earnestly hopes that the city will wake up and pass a law creating the office of dairy and milk inspector and when such law is enacted put a competent veterinarian in charge of it, not someone trained along other lines.

RECENTLY a student of the Colorado Agricultural College was taken sick. A diagnosis of appendicitis was made and an operation recommended, which was undergone by the patient. At the operation there was found, instead of one vermiform appendix, three appendices, one in a normal state, one containing some earthy concretions, and a third containing much pus and in a sloughing condition.

THREE DISEASES OF ANIMALS WHICH HAVE RECENTLY ASSUMED IMPORTANCE TO THE STATE SANITARIAN.*

By John R. Mohler, Chief of Pathological Division, Bureau of Animal Industry, U. S. Dept. of Agriculture.

The three diseases to which I desire to call your attention to-day are infectious anemia (swamp fever), mycotic lymphangitis (pseudo-farcy), and chronic bacterial dysentery (Johne's disease). These diseases have recently been found to have a greater distribution in the United States than has heretofore been known, and they have therefore assumed importance to you as state sanitary officers, not only on account of their own individual character but also because of the great similarity which they bear to other more common infections with which they may be readily mistaken. A brief discussion of the more important features of each of these three diseases will be given below.

Infectious Anemia.

Infectious anemia, known also as swamp fever, American surra, malarial fever, and typhoid fever of horses, the unknown disease, no-name disease, plains paralysis, and pernicious anemia, has recently been the subject of much investigation, and the cause of the disease has now been definitely determined as an ultramicroscopic body which is capable of passing through the pores of the finest Pasteur filter, like the infection of foot and mouth disease, rinderpest, hog cholera and similar diseases. The disease is most prevalent in low-lying and badly-drained sections of the country, although it has been found in altitudes as high as 7,500 feet on the marshy pastures during wet seasons. Therefore proper drainage of infected pastures is indicated as a preventive. It is also more prevalent during wet years than in dry sea-

* Presented to the twelfth annual meeting of the Inter-State Association of Live Stock Sanitary Boards at Washington, D. C., Sept. 14, 15, 16, 1908.

sons. It usually makes its appearance in June, and increases in frequency until October, although the chronic cases may be seen in the winter, having been contracted during the warm season.

CAUSE.—It has been conclusively proven that infectious anemia is produced by an ultramicroscopic organism which is transmissible to horses, mules and asses by subcutaneous inoculation of blood serum. The virus which is present in the blood may be transmitted to a number of equines in a series of inoculations by injecting the whole blood, the defibrinated blood or the blood serum which has been passed through a fine Pasteur filter, thus eliminating all the visible forms of organismal life, including bacteria, trypanosoma, piraplasma, etc. This virus has also been found to be active in the carcass of an affected animal twenty-four (24) hours after death. Following the injection of the infectious principle there is a period of incubation which may extend from ten (10) days to one and one-half (1½) months, at the end of which time the onset of the disease is manifested by a rise of temperature. If uncomplicated the infection runs a chronic course, terminating in death in from two (2) months to one and one-half (1½) years, or even longer. The probability of the virus being spread by an intermediate host such as flies, mosquitoes, internal parasites, etc., is now receiving careful consideration. From experiments already conducted it appears that this disease, formerly supposed to be confined to Manitoba and Minnesota, is more or less prevalent in Kansas, Nebraska, Colorado, Wyoming, Montana, North Dakota and Texas.

SYMPTOMS.—Swamp fever is characterized by a progressive, pernicious anemia, remittent fever, polyuria and gradual emaciation in spite of a voracious appetite. The disease begins to manifest itself by a dull, listless appearance, and by general weakness, the animal tiring very easily. This stage is followed closely by a staggering, swaying, uncertain gait, the hind limbs being mostly affected. There is also noted a weakness and tenderness in the region of the loins, and at the same time the pulse increases in rapidity and may run as high as seventy (70), though

weak, stringy and intermittent. The temperature may rise to one hundred and three (103) degrees or higher, remaining high for several days, and then dropping, to rise again at irregular intervals. Towards the end of the disease, the temperature occasionally remains persistently high. The horse may improve for a time, but usually this temporary improvement is followed by a more severe attack than the first. Venous regurgitation is sometimes noticed in the jugular before death. The quantity of urine passed is enormous in some cases. Death finally occurs from exhaustion or syncope.

The blood shows a gradual but marked diminution of red corpuscles, the count running as low as two million corpuscles per cubic millimeter, the normal count being seven million per cubic millimeter. If the blood is drawn from such an animal, the resulting red clot with be about one-fifth (1/5) of the amount drawn. Occasionally a slow dripping of blood-tinged serum from the nostrils is observed as a result of this very thin blood oozing from the mucous membranes. Petechia are sometimes noticed on the membrana nictitans and conjunctiva, and paleness of the visible mucous membranes is usually in evidence, although they may have a yellow or mahogany tinge. Often a fluctuating, pendulous swelling may appear on the lower lip, point of elbow, sheath, legs, under the belly, on some other pendant portion, especially late in the disease, which is indicative of poor circulation, thinning of the blood and consequent loss of capillary action.

Lesions.—After death the carcass is found to be very emaciated and anemic, the visible mucosai being very pale. This marked absence of adipose tissue makes skinning a difficult task. Subcutaneous and intermuscular edema and hemorrhages are frequently observed, although it is remarkable in many cases to see how few macroscopic lesions may be present. The predominating and most constant lesion is probably the petechia so often observed in the muscle or on the serous membranes of the heart. The heart is generally enlarged and may be the only organ to

show evidence of disease. In other cases the lungs may be studded with petechiæ, with a serous exudate present in the thoracic cavity. The pericardial sac, in addition to the petechiæ already noted, generally contains an increased amount of fluid. The abdominal cavity may show a hemorrhagic condition of the intestines and peritonitis which probably results from overfeeding in consequence of the ravenous appetite present. The liver sometimes presents a few areas of degeneration although usually normal. Spleen is at times found to be enlarged and covered with petechiæ. Kidneys may appear normal or anemic and flaccid, but microscopically they usually show a chronic parenchymatous degeneration. Lymph glands may be enlarged and hemorrhagic.

DIAGNOSIS.—The diagnosis of the disease is not difficult, especially in advanced stages. The insidious onset, remittent fever, progressive emaciation and anemia, unimpaired or ravenous appetite, staggering gait and polyuria are a train of symptoms which make the disease sufficiently characteristic to differentiate it from other diseases affecting horses in this country. The peculiar relapsing type of fever is sufficient to differentiate it from the anemias produced by internal parasites, while it may be readily separated from surra by the non-susceptibility of cattle and the great ease with which the trypanosoma may be found in the latter affection.

PROGNOSIS.—The prognosis of the disease is very unfavorable. Veterinarians in different sections of the country where the disease is prevalent claim a mortality of seventy-five per cent. (75%) or even higher. Recovery only takes place when treatment is begun early, or when the animal has a long convalescent period.

TREATMENT.—The treatment of the disease has so far been far from satisfactory. The iodide, permanganate and carbonate of potash have been used. Arsenic, axytol, quinine and silver preparations have been suggested, but all have been without uniform success. Intestinal antiseptics have been resorted to and the results are encouraging but not altogether satisfactory.

Symptomatic treatment seems to be the most dependable. For instance, Dr. Davison, of this Bureau, was able to reduce greatly the mortality from this affection by giving an antipyretic of forty (40) grains of quinine, two (2) drams of acetanilid and thirty (30) grains of powdered nux vomica four times daily. In the late stages with weak heart action, alcohol should be substituted for acetanilid. Cold water sponge baths may be given, and in addition frequent copious injections of cold water per rectum, which has a beneficial effect in reducing the temperature and likewise in stimulating peristalsis of the bowels, which, as a result of the disease, show a tendency to become torpid during the fever. Avoid giving purgatives unless absolutely necessary, on account of their debilitating effect, but instead give laxative, easily digestible foods. Not infrequently a dirty, yellowish tinge of the visible mucous membranes has been observed, in which cases twenty (20) grains of calomel in from two to four (2 to 4) drams of aloes in a ball of two-dram (2) doses of fluid extract of podophyllin may be given. Following the subsidence of the fever a tonic was administered, composed of iron, quinine, nux vomica and gentian, in combination.

Mycotic Lymphangitis.

Epizootic lymphangitis, pseudo-farcy or Japanese farcy is a chronic contagious disease, particularly of equines, caused by a specific organism, the *Saccharomyces farciminosis,* and characterized by a suppurative inflammation of the subcutaneous lymph vessels and the neighboring lymph glands. Owing to the fact that this affection does not spread as an epizootic, and that its causal factor is an yeast-like fungus, the name mycotic instead of epizootic lymphangitis is suggested. This disease was first described by Italian and French veterinarians, and the specific organism was discovered by Rivolta in 1873. The presence of the disease in the United States was first observed by Pearson in Pennsylvania in 1907, although it is probable that it has existed in various parts of this country for many years. More recently its presence was definitely established in Ohio, Iowa,

California and North Dakota, and there is a probability of its existence in Indiana and several Western states. The disease is also present in the Philippine Islands, Hawaiian Islands and Porto Rico.

BACTERIOLOGY.—The *Saccharomyces farciminosis* form slightly ovoid bodies 3-5 microns long and 2.4-3.6 microns broad, which are somewhat pointed towards the poles and have a sharp double contour. They have more or less of a homogeneous content and grow by budding. This characteristic can be especially well observed in old growths on culture media. Their staining with the ordinary stains is quite unsatisfactory; however, they may be readily recognized in fresh smear preparations or in the hanging drop of a small quantity of the suspected pus, where the above described bodies can be distinctly noticed.

A satisfactory method of staining the organism is the Claudius method, which is as follows:

1. Stain with 1 per cent. aqueous solution of methyl violet for 2 minutes.
2. Wash.
3. Place in a half-saturated solution of picric acid for one-half minute.
4. Decolorize with chloroform or clove oil.
5. Treat with xylol.
6. Mount in Canada balsam.

The organisms grow very slowly in the various culture media; it requires about ten days before vegetation is noticed on agar in the form of grayish-white granules which gradually grow to larger colonies, appearing considerably elevated and having a wrinkled surface. It also grows in bouillon in which a white flaky deposit makes its appearance after fifteen or eighteen days. In taking cultures it is advisable to open a fluctuating abscess over which the skin should be shaved and well cleaned with bichloride solution and alcohol. The abscess should be opened with a sterilized scalpel and culture media may then be inoculated in the usual way. In case of a mixed infection, the organism may be isolated by plating.

The period of incubation varies greatly; it extends from three weeks to four months or even longer. In artificial inoculations with pus through wounds in the skin, inflammation and swelling of the lymph vessels may be noticed in twenty to sixty days, which show in their course a development of hard nodules from which abscesses form.

The natural infection is without a doubt caused through superficial wounds such as galls, barbed wire cuts, or through various stable utensils, harness, bandages, insects, etc. Solipeds are mostly susceptible but cattle may also be infected.

SYMPTOMS.—The inflammation of the lymph vessels is usually first observed in the extremities, especially one or both hind legs; it may also appear on the fore legs, shoulder or neck, more rarely on the rump, udder and scrotum. The lesions, as a rule, develop in the tissue adjacent to the place of inoculation. In the early stages of the disease the lymph vessels appear very hard and thickened, and along their course hard nodules develop, ranging in size from a pea to that of a hen's egg. Later these nodules soften, burst spontaneously and discharge a thick yellowish pus. The surface of the resulting ulcers or abscess cavities soon fill up with exuberant granulations which protrude beyond the surface of the skin, giving a fungoid appearance. The affected extremities are considerably enlarged, similar to cases of simple lymphangitis. In rare cases the mucous membrane of the nostrils may also become affected, showing yellowish flat elevations and ulcerations, and these may extend by metastasis to internal organs. In cases where the mucous membrane is affected the submaxillary lymph gland may also become enlarged and suppurate. The constitutional symptoms accompanying this disease are not often marked or may be absent. There is usually only a very slight fever observed which seldom runs over 102° F. The appetite is not impaired except in the advanced cases.

LESIONS.—Of the anatomical changes the skin and the subcutaneous tissue show the most marked lesions. They may become 2/3-inch thick and indurated as the result of fibrous tissue

formation due to the inflammation present. On the bacon-like cut surface suppurative areas and granulating sores may be noticed of various sizes; also enlarged lymph vessels filled with clotted lymph mixed with pus. The neighboring lymph glands are usually enlarged and frequently contain suppurating foci. Rarely the internal organs may show metastatic abscesses.

DIAGNOSIS.—The diagnosis is based on the characteristic appearance of the ulcerations which show exuberant granulation of a bright red color, inverted edges and a thick, creamy glutinous discharge. These manifestations differentiate the disease from glanders in which the ulcers are crater-like, do not contain exuberant granulations and the discharge is of a viscous, oily character. The submaxillary and other lymph nodes, as well as the corded lymphatics in glanders, are more firmly attached to the adjacent tissues, and are therefore less movable. In some chronic cases of mycotic lymphangitis, however, the lesions may closely resemble those of farcy, and in these cases the microscopical examination of the pus will disclose the nature of the affection. In the pus the saccharomyces can be easily seen in the unstained specimen and is recognized by its size, shape and highly refractory double outline.

TREATMENT.—Treatment consists at the onset of the disease in entire extirpation of the nodules, lymph vessels and neighboring lymph glands in case the lesions are localized. In cases where the nodules formed abscesses their opening is recommended, followed by the application of the actual cautery or a 1-250 solution of bichloride of mercury. It must be borne in mind that the organism is highly resistant to almost every antiseptic and the best results will be obtained from the application of a solution of a strong antiseptic following the opening of the lesions.

In the most favorable cases recovery results in from five to seven weeks; as a rule, however, it requires several months.

PROPHYLAXIS.—In order to prevent the spreading of the disease the affected animals should be isolated, the products of the disease should be destroyed, and the stable should be disinfected

with very strong liquid disinfectants in consideration of the great resistance of the causative organism.

Chronic Bacterial Dysentery.

Chronic bacterial dysentery is a chronic infectious disease of bovines caused by an acid-fast bacillus simulating the tubercle bacillus, and characterized by marked diarrhea, anemia and emaciation, terminating in death.

Recently the disease has been observed in the United States for the first time by Pearson in Pennsylvania cattle and later by Beebe in Minnesota and Mohler in Virginia cattle, and in an imported heifer from the Island of Jersey, at the Athenia Quarantine Station of the Bureau of Animal Industry.

The former has proposed the name chronic bacterial dysentery for this affection and it has also been termed Johne's disease, chronic bacterial enteritis, chronic hypertrophic enteritis and chronic bovine pseudo-tuberculosis enteritis by various European investigators. The disease was first studied in 1895 by Johne and Frothingham in Dresden, but they were inclined to attribute the cause of the peculiar lesions of enteritis which they observed to the avian tubercle bacillus. In 1904, Markus reported this disease in Holland, and subsequently it was observed in Belgium, Switzerland, Denmark and Great Britain.

Cause.—The bacillus, which has been invariably demonstrated in the intestinal lesions and mesenteric lymph glands in this disease, is a rod about 2 to 3 microns long and 0.5 micron wide. It stains more or less irregularly like the tubercle bacillus and, moreover, the similarity goes further in that the organism is also strongly acid-fast, which fact led Johne and Frothingham to surmise that the disease was caused by avian tubercle bacilli. However, it has now been plainly demonstrated that the bacillus of chronic bacterial dysentery is readily distinguished from the latter organisms, for while it resembles the tubercle bacillus in form and staining qualities, no one has succeeded in growing it in culture media or in reproducing the disease by injecting experiment animals.

SYMPTOMS.—Probably the first symptom noticed is that the animal is losing condition despite the fact that its appetite is good and the food nourishing. This is soon followed by a diarrhea which, while moderate at first, soon becomes excessive and may be either irregular or persistent, the feces being of the consistency of molasses and passed frequently. In the meantime the hair becomes dry and harsh and the animal falls off considerably in weight. The temperature, however, remains about normal. The appetite does not seem to be greatly impaired until the last few weeks of life, but nevertheless emaciation continues, the animal becomes more and more anemic, great muscular weakness and exhaustion are manifested and death follows, apparently as the result of the persistent diarrhea and great emaciation. The disease may continue for four or five weeks or may last for a year or even longer before death intervenes.

LESIONS.—The lesions observed in post mortem are remarkably slight and out of all proportion to the severity of the symptoms manifested. The disease appears to start in the small intestines, especially in the lower portion where the lesions are usually the most marked, but it also involves the large intestines, including the rectum. The mucous membrane may alone be affected, although usually in the long-standing cases the submucosa is also invaded and the entire intestinal wall is then much thicker than normal and the tissue infiltrated with an inflammatory exudate. The mucous membrane or inside lining membrane is markedly wrinkled or corrugated, showing large coarse folds with more or less reddening or hemorrhagic patches or spots on the summits of the ridges, especially noticeable in the large intestines. The mesenteric lymph glands are usually somewhat enlarged and appear watery on section. The other organs do not appear to be affected except from the anemia present in the latter stages of the disease.

DIFFERENTIAL DIAGNOSIS.—The principal disease with which bacterial dysentery may be confused is tuberculosis, but the application of the tuberculin test will readily diagnose the latter

disease while no reaction will be noted in case the injected animal is suffering with only the former affection. The disease may also be mistaken for the parasitic affections resulting from stomach worms (verminous gastritis) and intestinal parasites, especially uncinariasis, but a microscopic examination of the feces is necessary in order to establish definitely the diagnosis.

TREATMENT.—As with all other forms of infectious disease, it is advisable to separate immediately the diseased and suspected cattle from the healthy animals. The feces passed by the former animals should be placed on cultivated soil where healthy cattle would not be exposed to them, as the bacilli producing the disease are readily found in such manure. The stalls, stables and barnyards should also be thoroughly disinfected, special attention being given to those places which have been soiled by feces. The administration of medicines has thus far been quite unsatisfactory, although treatment should be directed toward disinfecting the intestines with intestinal antiseptics, such as creolin in two teaspoonful doses given twice daily, hypodermically. Salol, turpentine, or subnitrate of bismuth in a starch or wheat flour gruel may also give temporary relief, but the diarrhea is likely to reappear and cause the death of the animal. In all cases the food must be carefully selected to assure good quality, and should consist preferably of nutritious dry feed.

VAIN RECRIMINATION.—"Calling names don't make any real difference," said the conservative campaigner. "No," answered the scientist. "If it did those Latin titles we have bestowed on germs would have discouraged them long ago."—(*Washington Star.*)

OWNERS of dairy cattle, in the State of New York, who purpose to have their herds freed from tuberculosis and to keep said herds free from the disease, may, under the amended agricultural law, obtain state aid by complying with conditions prescribed by Commissioner of Agriculture, Raymond A. Pearson. Applications for examination for tuberculosis should be made on official blanks supplied by the Department of Agriculture.

DAIRY INSPECTION*.

By W. G. Hollingworth, D.V.S., Utica, N. Y.

There is no subject of greater importance to the veterinarian, especially one who has the benefit of a rural practice, than dairy inspection.

Why? Because the whole community subsists on products of the dairy during the most critical period of their physical existence, and the health of the community depends largely upon the healthful condition of our dairies and the cleanliness of the products produced from such; and by competent inspection the death rate, especially among children, which is largely caused by polluted milk, either caused by neglect of the producer or the consumer, would be greatly lessened. I mentioned competent inspection. How are we going to have this come about? Only by protecting the young graduate from the illegal practitioners that are scattered so thickly among us. They are thriving on what rightly belongs to the veterinarians who have fully complied with the laws. Now, if these laws are effective, why not make an example of some of them. If they are not, let us improve them.

These unqualified men are a menace to the dairymen. They may be handy in a case of dystokia; but take, for instance, a dairyman that has anthrax in his herd. It is their notion that the cause of death is due to a poisonous weed. They take no precaution. Why? Because they do not know how. The owner will ask, What am I to do with this carcass? Why, skin it and give to chickens or hogs; maybe the dogs come in for a meal. Some bury it. How often you see or hear of someone infected by skinning a cow. Get dead animals off the premises if possible; burn them; do not make a cemetery of the farm; thoroughly disinfect the place where the cadaver has lain.

*Read before the 19th annual meeting, N. Y. S. V. M. S., Utica, N. Y., September 3, 1908.

Now, in regard to sporadic diseases. Their panacea is to cut a hole in the skin of the tail; sew in a piece of salt pork; bore a hole in the horn and pour turpentine in it and a pound of sul. magnesia. Others give a piece of salt pork to make them chew their cud, etc. It seems to me that we have enough to contend with without letting these fellows reap the harvest that rightly belongs to the others who are well worthy of proper recognition.

In the city we have the automobile which, with a certain class, has developed a sort of insanity, "Dementia Automobileania," which in time, with the reckless handling of the machines, more headstones and monuments, relief will come. In the country, we get the farm desertion, a very serious thing for the veterinarian and the state at large.

The sons and daughters are flocking to the cities seeking work and when they get it they are not any way near compensated as they would be on the farm. The trouble is the rising generation want to see more life and gaiety, notwithstanding the ruination of health that such living leads to.

The attraction on farms are many now to what they used to be. There is the rural delivery; many farmers get the morning papers as soon as their city friends, also their mail. There is the telephone; it is a rarity to go to a farmhouse and not see this instrument of gossip. There is the trolley roads that are constantly being built, much to the convenience of the farmer, along with the good roads movement. All these things, along with other ways of entertainment which can be advised, will lead to a way to check this "dementia rusticana" that is prevailing at present.

In regards to the good roads movement, the farmers must unite and see to it that the laws to check this horseless vehicle from ruining them be enforced, which they are doing by speeding so fast they suck up the top dressing and distribute it to the farm buildings and houses much to the detriment of cleanliness; in fact, the farmers have had to move their aeration

stands on account of this dust and dirt that comes in clouds from the roads caused by the excessive speed of the automobiles.

A campaign of education would greatly help to benefit the dairymen. Farming and dairying now and years ago are entirely different. We want more educated farmers. When we come across a farmer's son of intelligence that tries to learn, see to it that he is properly educated; have him attend an agricultural school; if money is lacking, there are philanthropic people that would lend the necessary funds; all they want is a personal note, and it would be a very ungrateful person that would not attend to this in due time. When he graduates, there will be plenty of openings awaiting him. He will set up a rivalry amongst the rest of the community where he is located; he will do things so differently and his ways will be copied.

Our institutions of education should devote more time to agriculture, especially the high schools in rural districts. Industrialism is an important problem; have the hand and brain work in unison; more time should be devoted to plant and animal life. Let them study languages, etc., that like, but it would be more credit for colleges to turn out more students of agriculture than bank clerks, school teachers, etc. He is a factor in his community who has improved the condition of some vegetable, or, by scientific breeding, has improved his dairy. It wants an active brain to do such things, and by education a foundation has been laid for the student to build a good substantial frame on, and by so doing you will keep them on the farms.

The farmers are not the only ones that need the education; the consumers of the dairy products need it also. Some do not seem to realize what the farmer means to the success of this great country. Just think, for a moment, what would befall us if the farmer should change his ideas of livelihood. Take the dairy for one thing. There are some that have gone out of the dairy business for various reasons. One is the scarcity of help, and another is the insufficient compensation for the products of the dairy. Some have gone into sheep raising; others

into hay and grain. Another is they find it impossible to comply with the regulations which they are required to live up to if they want to sell milk for city consumption. Here is where the veterinarian knows better than anyone else what the farmers can do and do it right. They, the veterinarian or the veterinary inspector, are the ones that should attend to these regulations rather than the health officials.

Our farms are not as productive as they were years ago. The fertility of the soil has been lost, due to constant vegetation and not enough replenishing. The productiveness of the soil is of great consequence to the dairyman. By constant fertilization, he can produce sufficient food to supply his stock during the season that they cannot help themselves.

A farmer does not lose when he grains his stock; the manure is of much more value by so doing, and the farmer, by not letting the refuse of the stable go to waste, greatly improves the richness of the soil. Now, instead of having to dispose of some of his stock, due to lack of sufficient fodder to winter them, he will have to increase his belongings. And here is a proposition for a dairyman: That is to raise stock from his best cows, and by so doing, he will have young stock to take the place of the ones to be discarded, and this is a very necessary thing for a dairyman to do. And another thing is to know which cows are paying their way. To do this is to number or name each and every milker in the herd and weigh the milk, and by so doing an accurate account can be kept.

To be able to furnish dairy products to a community that is rapidly growing is a proposition which the farmer must wake up to. He is a necessity; we cannot exist without him. There is no doubt that a successful farmer or dairyman is a most independent person. How many young men that have inherited fortunes could make themselves useful to a community by investing in a farm.

I have a friend that bought a farm that cost him twenty thousand dollars ($20,000) by the time he had it stocked, etc. Last year his gross receipts amounted to eight thousand dollars

($8,000), divided as follows: His dairy produced three thousand six hundred dollars ($3,600), his hogs two thousand three hundred and fifty dollars ($2,350), his sheep one thousand seven hundred and fifty dollars ($1,750), and other receipts enough to make the amount. His total expenditure was four thousand dollars ($4,000), making his net receipts four thousand dollars ($4,000) on the investment. Now, where could this man invest this amount and get such returns?

It is a matter of much importance that our veterinary schools should see to it that they pay more attention to milk and meat inspection. Our boards of health would seek their advice in regard to such duties, and it would create a source of revenue for the qualified veterinarian, just as our neighboring State of Pennsylvania has done by passing a state meat inspection law.

The veterinarian, and especially the rural practitioner, should be the one to encourage this dairy inspection, and that is what the country districts lack, is rural practitioners. The cities are caring for themselves. Many cows die just because the cost of getting a city veterinarian would be too great, and so the unqualified man is called in, much to the regret of the intelligent farmer.

To make dairy inspection a success, we must have laws to back it up, and at present there is a man at the head of the agricultural committee, a Mr. Boshart, a very large farm owner and business man and a thorough believer in the veterinarian, that is working on this line. The object of such legislation would be to better the products of the dairy farms and also benefit the producer in turn, and by so doing and with the help of the Agricultural Department stamp out the fraudulent conditions existing in some districts.

A few words about the frauds that are going that the consumer has to pay for and the dairyman gets the blame unjustly. There are in this state five hundred and ninety-one (591) milk-gathering stations situated in different parts of the state; they purchase milk from the producer and reship it for consumption; the fraud consists in skimming milk and selling

it for whole milk. The procedure of this adulteration is as follows: They put thirty-six (36) quarts or a little less of whole milk in forty (40) quart cans; then they fill this up with milk that has been skimmed, and this is shipped to New York as whole milk. The Department of Agriculture estimates that 10 per cent. of the milk of some districts shipped to the cities is skimmed in this manner. Now, the amount that the consumer is cheated out of will figure, no doubt, into the millions. The fraudulent dealers make a good thing, as they sell the cream for six dollars ($6.00) or eight dollars ($8.00) a can, which is clear profit for them if they are not caught.

Naturally, pure milk rather than artificially purified milk is what we expect to produce under competent dairy inspection, and to accomplish this with the limited experience I have had in this line I have adopted a few rules to be governed by:

1. Is to see to it that the buildings and surroundings are in as hygienic condition as possible.
2. Proper care in feeding.
3. Healthful condition of herd.
4. Healthful condition of help.
5. Cleanliness of stables and cows.
6. Certain requirements about milking.
7. Proper care of milk immediately after milking.
8. Proper straining and cooling.
9. Proper care of utensils.
10. Proper conveyance of milk.
11. Agreement signed by producer and dealer.

Rule 1. Barns should have all the light that is possible and good ventilation; if possible, have it situated on high ground; a cement floor is the best; surroundings must be clean; do not have manure pile just outside of the door so the cows have to walk through it coming and going; it brings unnecessary filth to the stable and smears the appendages which greatly interferes with the milking, that is, as to cleanliness.

Rule 2. In regard to proper care of feeding, if you expect to get milk you must feed; the quantity of milk depends on it;

it is better not to give dry rations just before milking on account of the dust that naturally rises; if the dairyman insists, a moist food can be given; better not give food that might produce a taste or odor too near milking time as it might be noticeable in the milk; do not let silage remain about the stable, as the odor of it might be absorbed by the warm milk, if the milk is not taken out of the stable immediately after milking.

Rule 4. The healthful condition of the help is very necessary; no sickly person should assume care of stock; in case of a contagious or infectious disease on the premises radical measures should be adopted, and so it may be in regard to convalescent stages; take typhoid, where the fæces are infected for months after; some of the discharges might in some way pollute the water and in due time might infect the milk, and by so doing an outbreak of typhoid might result; there is diphtheria and scarlet fever also.

The physicians in charge of rural patients should be compelled to see to it that strict measures are carried out in this line. Notify the dairy inspector, if there is one in the locality, and he in turn will govern himself accordingly. What would give a veterinary inspector more pride than to assume charge of an investigation of an outbreak of some contagious disease supposed to be due to milk pollution? That would be the case if veterinary inspection were established. The boards of hea|th would find it necessary to call upon us.

The rule as to milking—the words "be clean"—are necessary to be taken into consideration:

Care of the milk after milking. As soon as the milker is through with a cow, he should remove the milk from the stable to a proper receiving place where the animal heat can be removed. The aeration of milk is a very necessary thing to do. It removes the gases and helps to remove the odor, but the stands must be located in a proper place, not along the roadside where it will collect the dust, etc., from them. The necessity of keeping milk at a low temperature, about 45 to 50 degrees F., as this checks bacterial growth.

Care of the utensils. There has been a law passed which makes this compulsory. I am of the opinion that the women are the ones to see to it that the utensils are kept clean. The woman is a very necessary adjunct to the dairy farm; she is naturally more cleanly and observing about such things, but she must not be made a drudge of. Give her a varied life. By so doing, a great many more would be contented to remain on the farms and get married to some farmer's son, and they, in turn, start a life of industrialism on a scale within their means.

Conveyance of milk. It is a common thing to see a farmer carrying garbage and milk cans and possibly manure in the same wagon box; also milk exposed to the sun's rays and possibly has to be carried a long distance; this should be abandoned.

Healthful condition of herd. Of these rules the one that gives me the most anxiety is the one pertaining to the healthful condition of the herd and I am in a quandary to know what is going to be done to eliminate the diseased animals, the one most especially is tuberculosis, which is rapidly gaining headway in this state among our dairy herds. In 1897 I tested herds that supplied milk to my city by order of the Board of Health and I found about 7 per cent. Now, within a year or two I have tested some herds in the same locality and found 60 per cent. That may have just happened so, but it scares me to think of it, and I see no reason why other parts of the state should be different, with the lax condition of affairs as they exist at the present time. Very often I am asked to test a herd. I am only too willing to act if I have an opportunity of holding a post-mortem examination on the reactors. Few comply with my request, but the large majority want to rid the dairies or herds of this disease, only to dispose of the reactors to some innocent person. Now, this is the way that the disease is spreading. There is another serious proposition and that is over-testing, so to speak. Some dealers just previous to sale, knowing that the prospective purchaser requires cows that will not react, will get tuberculin and inject them. They do not care whether they have a reactor or not. They have found out that a recent re-

actor may not react a second time within a period of a few days. I always advise a purchaser that he had better retest in three months if he is anxious to have a healthy herd.

The use of milk from the herd should be discontinued if any diseases should break out that is affecting any number of them. The use of milk from any cow should be discontinued while she may be suffering with any febrile malady. It is quite proper not to use milk from a cow that has just freshened, or one that the afterbirth is retained, or one that is nearing the period of gestation. The quantity she gives is of no consequence and should not be mixed with the milk for human consumption. To have these requirements lived up to a great deal depends on the dairyman, whether he is a conscientious person, or dishonest, or careless, or ignorant. Whatever may be the cause the way to rectify it is to have the herd or herds under veterinary inspection, and I have every reason to think that a great deal of diplomacy can be used in such cases. Because we are trying to carry out dairy inspection there is no reason why we should get the enmity of the dairymen.

Animals indisposed should be taken from the herd and proper care given them according to the nature of the case. There is another sad state of affairs: that is the falsified tests. I have every reason to believe that such are given out, and I am very sorry to think that one of our profession would belittle himself for a mere sum to lend his signature for such purposes. He cannot have the interest of the dairy at heart, or his profession, especially if he looks ahead and thinks what the consequences might be, as the healthful condition of the community depends much on reliable dairy inspection.

The procedure of handling of tuberculosis by the Department of Agriculture, I think, could be improved, in regard to compensation especially. It does not seem right to keep the dairyman the length of time without his check for the condemned animals, if the state has the funds; if they haven't, then they should go slow. I can call to mind one herd that the state

officials tested early in the spring and as yet this dairyman has received no compensation.

I think the post-mortems should be held in the neighboring vicinity so the results of such could be witnessed by the owner and neighbors as well as medical men, many of whom have never seen a case of bovine tuberculosis. Their indorsement would go a great ways. When they are shipped away it makes the farmer suspicious as to the findings. Of course, the owner has the privilege of going to see the same, but there is an extra expense for him.

Many farmers are not advocates of the tuberculin test, but if you can demonstrate to them, before their eyes, what the test has done it will be a great help to us in regard to inspection. The health departments of our cities are asking for a better quality of milk. They are not partial to pasteurization but ask for clean milk from healthy cows. This is of as much consequence as pure water, and some means must and will be advanced to bring this about. Stamping out would be expensive and next to impossible. The Bang system would not be popular. Perhaps the time will come when we can immunize the young stock as successfuslly as is being advocated.

As our population increases, so the demand for our dairy products will increase also. Take New York city. The demand for milk increases at the rate of seventy-five thousand (75,000) quarts yearly, and other cities in proportion. A milk famine will be the result if some plans are not advanced to encourage the dairyman to continue this very necessary occupation, and make it an investment rather than a side issue. Dairy inspection would greatly help the farmer, as the inspector would see to it that the dealer lives up to his contract as well as the producer. There are some dealers that want the best end of the deal.

It was only a few days ago that I saw a notice in the papers where the Department of Agriculture seized forty carloads of dirty cans that were going to be shipped back to the producer. These cans must be thoroughly cleaned immediately upon empty-

ing. By proper inspection such cans as these would be watched and attended to.

In regard to certified dairies, there is no doubt that these are blessings to a community. They have been brought about by dairy inspection and we must encourage them, as one in a locality has wonderful influence upon neighboring farms. They have to get better prices for their products on account of the extra cost of producing them, but there is a ready market for such.

There is one thing that the veterinary inspector should see to and that is to have the public have confidence in his judgment, so when they see his signature affixed to circulars of certified products they can depend on it. A man's reputation or character in a position of trust is worth more than gold.

A RECENT number of *The Breeders' Gazette* contains an excelent portrait of Dr. Wm. F. Pflaeging, State Veterinarian of Wyoming.

The next meeting of the New York State Dairymen's Association, to be held in Utica, December 8 to 11, will be devoted almost entirely to the consideration of bovine tuberculosis.

"THE REVIEW is a very welcome monthly visitor." So says Horace B. F. Jervis, V.S., of Houlton, Maine, in sending his check for the renewal of his subscription. Dr. Jervis has just returned home from a European trip.

A CAREFUL DAIRYMAN.—"There," said the honest dairyman, as he put a gallon of water into his two-gallon milk can. "No one shall say that my milk is not clean. If that don't wash it, I don't know what will, unless I put in a little soap."—(*Harper's Weekly.*)

IT was a veterinarian, in the person of the newly-elected secretary of the New York State Veterinary Medical Society, John F. De Vine, D.V.S., of Goshen, N. Y., who made the report of the proceedings of the recent International Congress on Tuberculosis to the Medical Society of Orange County, N. Y., on the occasion of its recent quarterly meeting held at Port Jervis, October 20, 1908.

THE USE OF TUBERCULIN IN CONTROLLING TUBERCULOSIS IN HERDS.

By C. J. Marshall, V. M. D., University of Pennsylvania, Philadelphia, Pa.

Read at the International Congress on Tuberculosis, Washington, D. C., 1908.

There is an increasing desire on the part of breeders and dairymen to get and to maintain herds free from tuberculosis. Consumers, physicians and veterinarians are also interested in this subject. By good luck or good management many herds have never been infected with tuberculosis. Even more care and better judgment may have been exercised in guarding herds that have become infected.

Tuberculosis may be detected in the advanced stages by a physical examination. The physical diagnosis depends upon the stage to which the disease has progressed, its location and the cleverness of the observer. No pathognomonic symptoms are known by which the disease can be diagnosed in its incipiency and there is no case recorded of a herd that has been infected with the disease and made free from it where the diagnosis has depended on a physical examination alone.

Ability to recognize the physical symptoms is an absolutely necessary qualification of the veterinarian, but by this means alone we have never been able to detect all cases and we may never hope to do so. In tuberculin we have an agent that will show the disease in all cases to within a very small percentage. Tuberculin has been used and its action has been critically studied for the past eighteen years. We have yet to find one case where tuberculin has injured or has produced any ill effects in a healthy animal, when properly used. There is no doubt, in the minds of those who have studied it most critically and used it most extensively, of its reliability and harmlessness. It has been criticised for its abuse, not its use.

Tuberculin is but one link in the chain that is used to eliminate tuberculosis from a herd. When its judicious use is combined with the necessary isolation of reacting animals, thorough disinfection, ventilation and proper sanitation, its value cannot be gainsaid. We have a very large number of examples to show what it will do in controlling tuberculosis when accompanied by other measures for its suppression.

Seeing is believing with many people, and too many cannot understand that a disease exists till they can see its external effects or experience losses from it. Unfortunately, in the case of this disease, much of the damage has been done before there is ocular evidence of its presence.

The true cause of tuberculosis of cattle is no more a mystery; its presence can be detected at an early stage. Its contagious nature has been established beyond all doubt. The disease can be caused in no other way than by the tubercle bacillus and this germ does not multiply outside of the animal body, although it may retain its life and virulence for a long time. Agents for destroying the tubercle bacillus outside of the animal body are well known and can be applied practically. For these reasons the task of eliminating it is not impossible. It is, however, difficult in some cases.

We realize, more and more, that tuberculin is a safe, reliable test when honestly and intelligently used. There is no doubt but that its use should be restricted to those who are competent and skilled in its use, as well as in the disease of animals, who possess good judgment and are as truthful as tuberculin is itself. There is no better means for defeating the value of this test than to allow it to become an household remedy. Any intelligent person can soon learn to use a hypodermic needle and a thermometer. There are other things about the tuberculin test that are more complicated and at times men the most skilled in its use are put to their wit's end to know how to handle peculiar questions that arise in connection with this subject. It would be as easy, and far safer for the community, to try to teach the average farmer to be his own blacksmith, wagon

builder, lawyer, physician, etc., as to instruct him to do his own testing for tuberculosis. We need more persons who are skilled in the use of tuberculin and in the control of diseases of animals in general. The states or governments should spare no effort in training men as thoroughly for this work as the importance of the subject requires.

The time may not be ripe for legislation to attempt the compulsory eradication of tuberculosis from all herds, but many individuals have discovered that the disease can be controlled and that it is more economical to do this than to let it run its natural course. The state should at least furnish such men the necessary assistance. With our better class of breeders and dairymen this idea is spreading. The demand for meat and milk from tuberculosis-free herds is helping to bring about this desirable condition of affairs. Medical milk commissions require a tuberculin test once yearly, at least. There is no other known means of ascertaining whether a herd is free from tuberculosis.

The transmissibility of the disease from animals to man is an important question, but it is certain that this disease is transmitted from animal to animal, and those interested in dairy cattle cannot afford to allow it to run unchecked in a herd.

It will be a difficult matter to convince the masses of the fully established harmlessness and the usefulness of tuberculin so long as some agricultural and daily papers continue to malign its use. It is hoped that these agencies will soon see the facts in their true light and recommend the truthfulness and good qualities of tuberculin rather than continually to condemn it and to herald the mistakes and blunders that are made by those who are incompetent to use it.

Even those most enthusiastic in the campaign against bovine tuberculosis do not recommend the immediate slaughter of all animals that react to the test. No country, perhaps, could afford such extravagance. There is no doubt but that a majority of the animals that fail to pass this test have a monetary value. The sooner public opinion is educated to this fact, and that the products of such animals can be handled in such a way that their

safety can be assured, the sooner will ways be devised to use them profitably, and thereby encourage the cutting off of the main sources of infection.

A sufficient amount of knowledge has already been accumulated in reference to this disease to eliminate it from our herds in a few years if all parties concerned were in possession of the already known facts, and could and would make the necessary effort and sacrifice to apply them. The first necessary requisite would be a thorough knowledge of the disease on the part of the owner and his willingness to accept and follow the known facts in reference to handling it. No person should undertake this task unless he is willing and able to follow every requirement faithfully. Testing the herd once and cleaning the stable of all known sources of infection is a good beginning, but these measures must be followed year after year till the task is completed. This is especially true in herds where cows are constantly being added from the open market.

It has been found by experience that some cows will pass a satisfactory test at the time of purchase and react to a subsequent test in two months or less. This may be due to one of several conditions. First of all, the test may have been made carelessly or dishonestly, or the animal may have been in the incubative stage of the disease at the time of purchase and therefore fail to react. It is known that there is a period of incubation for tuberculosis of from one to three weeks. It is also known that animals will not react to a test during this period. Another possible cause for a reaction soon after purchase is the fact that the stable may not have been disinfected before the new members were added to the herd and thus they may have contracted the disease in their new quarters. Some animals have a much higher resisting power to this disease than others; this is especially noticeable in the new members of a herd.

It has been demonstrated that it is not safe to put newly purchased cows with the old members of a herd till they have first successfully passed a retest. This can be applied two or three months from the time of the original test and a double

dose of tuberculin should be used. Cows from tuberculous herds may develop the disease in the future, even though they be removed to a sanitary stable after having passed a satisfactory test. For this reason it is not advisable to purchase cows from herds that are known to be highly tuberculous, even though they pass the test successfully. The lesion of disease may become dormant for a time and the diseased area encapsulated but later it may break down, when the proper conditions are supplied.

In large dairy herds where cows are being added to take the place of undesirable ones, it is a difficult matter to keep the disease out entirely. It can be kept within bounds, and in a form that will seldom show itself physically. The chances are very great that the herd has tuberculosis where the tuberculin test is used only at the time of purchase.

In cases where many reactions are found at the time of test, a retest should be made in not more than six months. If the percentage of reactions is not more than from two to five, and the sanitary conditions are good, the retest can safely be left for a year. In large herds the test should be made at least once a year, even though it has previously passed with no reactions.

The records show hundreds of cows that have been tested at least once each year and sometimes twice, for several years, and are still breeding regularly giving a full and profitable amount of milk and are in perfect health, so far as can be determined by any known method. It is a question as to whether a cow that reacts once to the test should ever be considered free from tuberculosis even though it may appear healthy and, later, pass the tuberculin test.

Some of the most common errors made with tuberculin are due to carelessness or dishonesty. The test may be applied when the animals are in no condition for it. This is especially true in cows offered for sale by dealers. Such animals may be heavy springers fatigued and overheated by being driven from ten to twenty miles in the heat of the sun and then kept in a strange stable with no water, or an inadequate amount. The weather may be excessively hot and the stable badly ventilated,

or an animal may be of a nervous temperament and become unduly excited. Dealers are often anxious to get the animals through the test early in the day so that they can be shipped or sold and for this reason the temperature readings are sometimes not carried on long enough after the injection to show the reaction that might take place. The animal may have been injected with tuberculin before an honest test is applied. It happens occasionally that an animal will not react on successive tests where the intervals are less than two months. The test should never be applied unless the animals are quiet, contented and undisturbed.

In applying the test it is necessary to establish a normal temperature before making the injection. This can usually be done by two preliminary temperatures. The test may not prove satisfactory if the initial temperature is above 103° F. In cases of a high initial temperature, if the temperature is not above normal the next morning the animal is usually considered to be free from the disease. Where the temperature is high at the beginning and remains so it cannot be decided whether the high temperature is a continuation of the pre-existing fever or is a reaction to tuberculin. It is best, by all means, to start with a normal initial temperature.

A temperature measurement should be taken not later than ten hours after injection—eight hours is preferable, and in cases of retest it should be earlier than eight hours. The last temperature should be taken not earlier than the sixteenth hour but it must be followed longer if there is any upward tendency and a reaction is not already established.

The point at which a reaction is considered positive is a relative quantity. A temperature that rises gradually from the eighth to the sixteenth hour from 102 to 104 or above, under ordinary conditions, can be considered a positive reaction. In well marked reactions the temperature may rise to 107 or higher. This is more liable to occur in cases of recent infection or where the disease has not become generalized.

In advanced cases of tuberculosis or where the disease is suspected from a physical examination, a rise of one degree should be interpreted as a reaction. In herds where a large number of reactions have been obtained the line may be drawn more closely on doubtful cases. Animals that show a questionable rise in temperature at the time of test should be isolated and retested in about two months. In this case a larger dose of tuberculin should be used. It may be advisable to use three or four doses at one time.

During the time of testing the herd should be fed, watered, milked and stabled as usual. Water can safely be given soon after a temperature has been taken but it should not be allowed freely just before a temperature measurement. In stables where there is a constant water supply, there is no danger of the animals taking enough to interfere with the temperature. Tests in hot, muggy weather may not be satisfactory. So far as possible it should be arranged to do the testing in the cooler parts of the season.

Advanced stages of pregnancy seem to make little if any difference with the test. Many successful tests have been made during the day of parturition.

The utmost care should be exercised in sterilizing thermometers, needles, syringes, hands, clothing, etc., before and during the time of making a test. Contagious abortion, tuberculosis and other contagious diseases may be carried from animal to animal or from herd to herd if this precaution is not taken.

For those who are in sympathy with the work, the plan for handling tuberculosis is somewhat as follows: In herds where no animals are purchased, or but few, the tuberculin test is applied, the reacting animals are isolated and the stable disinfected. If a large percentage of the herd fails to pass the test, the above measures should be resorted to again in six months. Where but few reactions are found the retest can be deferred for one year. It is not safe to allow more than one year to elapse before making the retest, which should be repeated yearly.

In herds where animals are purchased frequently, the test

should be applied at the time of purchase by a veterinarian approved by the purchaser. Animals thus tested and passed should be kept on probation for two months and retested before they are allowed to mingle with the older members of the herd. The stable in which these animals pass the period of incubation should be carefully disinfected before they are admitted to it. The test of the herd should be applied at least once each year. In cases where many reactions are found the test should be made every six months until a low percentage is obtained. It is not advisable to test too frequently. The repeated use of tuberculin may produce immunity to the test.

The sale or distribution of tuberculin should be controlled by state laws and it should be given out only on the order of an official veterinarian. Every animal tested should be reported to some officer who has charge of this work and the records of such tests should be available for public investigation.

Every effort should be made to disseminate what knowledge has already been accumulated in reference to handling tuberculosis. The disease can never be satisfactorly controlled as long as ignorance and old, false ideas reign supreme.

THE next annual meeting of the American Veterinary Medical Association will be held in Chicago, September 14 to 17, 1909.

A VETERINARIAN IS A PHYSICIAN.—The *Morning Press,* Santa Barbara, California, of October 15th, states that the School Board refuses to recognize the Health Board as a legal body because Dr. J. H. Hester, one of the members of the Board of Health, is a veterinarian, in contradistinction to being a "physician," as the law requires, and demanded his removal. The mayor refused to remove Dr. Hester on any such ground, as the veterinarian has a broad knowledge of comparative medical science and best knows the needs of an efficient dairy inspection. A later report says that a legal opinion has been given to the effect that a veterinarian *is* a "physician." Dr. Hester will retain his seat on the Board of Health as a guardian of the health and lives of the human population from infection of animal origin.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

OBSTETRICAL CASES.*

By P. A. Aagesen, V. S., St. Ansgar, Iowa.

No. 1—April 19, was called to Mr. Kleinworth's farm and found one of the most difficult cases I have ever seen. Mare strained hard and could not stand up and half of the placenta loosened. In exploring I found a transverse presentation, but could not find head, tail or legs. I at once injected oil and tried to get a different presentation. Failing in this I punctured the foal and lots of gas escaped and then succeeded in getting a posterior presentation. I then explored for the legs and found them to be bent so it was impossible to lift them up to the pelvis. To make as quick delivery as possible I amputated the limbs in the hip joints and got them out and found two hock joints on each leg. The extra bones were bent over each other. I then fastened a rope in the pelvis of foal and two men pulled without results. I then made two long cuts, one on each side of the backbone (and more gas escaped), then one man pulled and the foal came out with balance of placenta. After disinfecting the wound we went to our dinner. Upon our return the mare was standing. Two weeks after she was put to work. If the mare had been able to stand up I think I could have delivered her in one hour, whereas it took three hours.

No. 2—On May 10 I was called to Mr. Robertson's place to attend a mare. As I was sixteen miles from home and not quite ready to start I told him that it would take about three hours before I could get there. On my arrival found mare in severe labor pains and vagina very swollen. I found I had a difficult case. Posterior presentation with back downward. I succeeded in getting the legs through the pelvis and expected to turn the foal. Not succeeding I explored again and found the head over the hip. I put the repeller in the nose and mouth and pushed it back about one foot. Then I found other trouble. The belly was too large. I made an incision at the belly and removed

* Report made to the Iowa State Veterinary Medical Association.

its contents. Then I succeeded in turning the foal and the mare was delivered and came out all right.

No. 3—Anterior presentation of monster. This was at the Austinson farm. The head, as large as a candy pail, was turned downward. I punctured the head and the water emptied out. By succeeding in introducing both of my arms I telescoped the skull bone. I found the skull devoid of brains.

In my professional practice of forty-three years I have never met so many obstetrical cases as last season. I was called to thirty-three cases during the period named.

A TWO-HEADED CALF.

The REVIEW is indebted to J. W. Rossiter, D.V.S., Fostoria, Ohio, for this picture of a two-headed calf. Dr. Rossiter writes that the spinal column was double dividing or parting just back of the shoulders and connected by short ribs. There were two hearts and two sets of lungs, one stomach and single intestines. The animal had two tails.

ANTIPERIOSTIN.*

A NEW THERAPEUTIC AGENT FOR THE TREATMENT OF BONY GROWTHS AND GALLS.

By Veterinarian S. WACHS, Vienna.

Translated by J. V. LADDEY, D.V.S.

Of the samples of various modern medicaments that have recently been submitted to me, Dr. Klein's Antiperiostin interested me most, since several commendatory testimonials in regard to its uses and results obtained by Austrian and German veterinarians have already been published. To judge from its composition, Antiperiostin is a solution of (C-10 H-10 J-2 O-5 Hg), which is prepared by a special process.

The principal application for Antiperiostin is found so far in all cases of exostoses and bursal enlargements. In my practice, in which occur many surgical cases, I have applied Antiperiostin in addition to above conditions, also to acute inflammations of tendons, tendinous bursae and articulations, as well as in spavin. I have had the opportunity to apply and to test Antiperiostin repeatedly in cases of newly developed bony growths as well as in those of old standing.

First of all I can state that in cases where there was lameness, due to these new growths, the same was abated in about three to four days, when the respective animal could again be worked. It should be mentioned, however, that a few days after the application of Antiperiostin an edematous swelling set in which, however, was not serious and in a short time resolved itself.

As is the case with other counter-irritating applications, the usual consequences also presented themselves here. The area thus treated became gradually covered with an extraordinarily hard scab, which in a measure appeared to be equivalent to a pressure bandage. After three to four weeks these scabs would become loosened and the exostoses which had existed were either entirely removed or had become reduced to a hardly noticeable minimum.

In recent new growths, also in periostitis, the pathological process had run its course in a highly satisfactory manner. The analogous procedure in the various kinds of galls and bursal enlargements produced equally satisfactory results.

*Reprint from Tierarztliches Zentralblatt.

In other acute inflammatory processes where consequently a marked lameness existed complete cures set in after about eight to ten days.

To corrobate the above I will cite from my case-book all those cases which were treated by me with Antiperiostin.

Case I, June 12, 1906.—Light wagon horse belonging to the firm of Sch. & Co., affected with spavin, presents three hours after application an edematous swelling of the respective extremity with an accompanying serous transudation at the seat of operation; in the next few days resolution of the edema and a desiccation of the exudate to a thick and closely adhering scab took place. After the fourth day the horse was used for work. Lameness had entirely disappeared and in about six weeks the scabs fell off.

Case II, July 14, 1906.—Middle-weight carriage horse belonging to F. & Co., had gone lame in varying degrees for some time in near hind leg due to an old bony growth just below the hock-joint. On the fourth day after applying Antiperiostin the horse traveled entirely sound and is being used regularly ever since.

Case III, August 24, 1906.—Middle-weight draught horse belonging to the express firm, L., went lame in near front leg due to two old bony growths and a thickening of the flexor tendons. Six days after an Antiperiostin application it was all ready able to work. The bony growths have almost entirely disappeared.

Case IV., August 25, 1906.—Light wagon horse of the same firm was treated with Antiperiostin for tendinous bursal enlargements on both hind legs. After eight days it had made a complete recovery.

Case V., January 5, 1907.—Russian coach horse belonging to the firm of S. & H. went lame in the off-foreleg due to a recent exostosis. Six days after Antiperiostin had been applied the horse was fit for work. The bony growth has been entirely removed.

In the last four mentioned cases the same accompanying local changes presented themselves as in case No. 1. One application of Antiperiostin sufficed to produce these astonishingly quick and excellent curative results.

The hair will fall out at the seat of operation with Antiperiostin, as is the case with all counter-irritating applications, but these will grow again in a comparatively short space of time.

ARMY VETERINARY DEPARTMENT.

PROVISION FOR PHYSICALLY DISABLED VETERINARIANS.

The forty-fifth annual meeting of the American Veterinary Medical Association is an event of the past and it was in all probability the greatest meeting in the history of the association. Its deliberations were of the highest order and will be of the greatest importance to the profession.

The Army was represented by Drs. Griffin and Foster officially and by myself of my own volition. The chairman of the Army Legislative Committee (Dr. Turner, of Washington, D. C.) was present and rendered his report which consists, in brief, as follows:

That the committee, feeling dissatisfied with the Veterinary Bill which passed the Senate at the last session of Congress, on account of no provision for those physically disabled in the service in the line of duty, used all their power to prevent its passing the House unless so amended.

The association accepted this report with its hearty approval, and passed resolutions* to the effect that should Congress amend the present Veterinary Bill so as to provide for those worthy members of the profession in the army that it would have the support of the association, and it further voted that copies of said resolution be sent to the Secretary of War, Chief of Staff, and the chairman of the Military Committee of both the Senate and House.

C. H. JEWELL.

THE Kansas City Veterinary College has an enrollment of over five hundred for the current session. This excellent institution has added several veterinarians to its faculty, including: Dr. H. Jensen, of Weeping Water, Nebraska, instructor in Pharmacy and Materia Medica; Dr. S. L. Stewart, of Coffeyville, Kansas, Director of Laboratory Anatomy; Dr. C. C. Kinsley, Oakley, Kansas, Hospital Clinics.

* The Resolutions were published in October REVIEW, page 117.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. Liautard, M. D., V. M.

Fibrous Tumor Growth on the Leg of a Mule [*D. Silvestro Rabagliati, B.Sc., M.R.C.V.S.*].—Record of a case in a mule which was stopped working on account of her condition. She had a large tumor-like mass involving the whole metacarpal region of the off leg and extending from the knee to the foot. The growth was irregular, raw, and looked like granulating tissue with small centers of suppuration. The anterior part of the wall of the hoof was partially separated from the rest. The upper part of the wall, the heels and the frog, being composed of a very irregular growth of horn in fungoid masses. The mule had marks of having been fired on the off thigh. The animal being incurable and useless, she was destroyed.

Post-mortem—Carpus normal. Metacarpus much enlarged with great mass of fibrous tissues surrounding the bones. Tendons are normal. Suspensory ligament had lesions of old standing sprain. Large exostosis on the head of the small internal metacarpal, also on the upper third of this bone there was a large splint, interfering with the action of the suspensory ligament. There was one also on the external metacarpal. The sesamoids were much enlarged with exostosis. There was also one on the os suffraginis and on the os pedis, which had very large side bones. The navicular bone was normal.—(*Veter. Record.*)

Comminuted Fracture of the Os Calcis [*Lieut. H. C. Stewart, A.V.C.*].—Discovered disabled on early morning, a field battery horse presented the near hock and surrounding tissues much swollen and inflamed. On examining the leg no evidence of fracture, such as crepitation, etc., could be made out on account of the swelling of the parts. The gastrocnemius tendon was much relaxed and similar to what is observed in case of rupture of the flexor metatarsi muscle. No weight was put on the leg and moving was possible only by scarcely touching the ground with the toe. The position of the point of the hock was somewhat similar to that of the point of the elbow in the condition

known as "dropped elbow." Diagnosis: Fracture of one of the large bones of the hock, possibly the astragalus or the os calcis, most likely. The animal was destroyed and a fracture of the lower half of the os calcis was discovered, and, after boiling the joint, this bone was found to have been broken into thirteen pieces. The cause of the accident was a kick from another horse. —(*Veter. Record.*)

NOTE ON THE OCCURRENCE OF A LARGE FLAGELLATE, ASSOCIATED WITH PIROPLASMATA INFECTION IN A COW, IN BRITISH COLUMBIA [*Thos. Bowhill, F.R.C.V.S., F.R.C.S.*].—Investigations have recently been undertaken by the author in order to determine, if possible, the cause of a disease known locally as red water. He writes that, during his investigations, he found with an atypical piroplasmatic infection in the blood of a cow killed for post-mortem, a flagellate belonging to the trypanosomidæ. The parasite presented a flagellum at both extremities, but whether it was a true trypanoplasma or a trypanosome with a flagellum was a matter for future consideration. The piroplasmata observed occur mostly in pear and polygonal form. A few flagellates were some times seen, but in only a few instances did he observe a true bigeminate leaf form. These parasites may be modified form of the *Piroplasma bigeminum*. The malady runs a chronic course and the parasites are difficult to find. Infected animals succumb after a third attack. The rôle played by ticks in the spread of the disease is not yet fully determined. The author proposes to name the parasite *Piroplasma hudsonius bovis.*—(*Veterin. Record.*)

A MALFORMATION [*W. E. Blackwell, M.R.C.V.S.*].—A case of difficult parturition in a cow with a fœtus in breech presentation. The abdomen of the little fellow being distended and emphysematous, an incision was made through the median line and the viscera removed. More room being obtained, examination was possible. It was then found that the fœtus was abnormally large and that the hind legs were fully flexed but with the points of the hocks turned underneath the sternum and between the fore legs, while the hind feet were just above the udder. In other words, the hind legs were turned completely round with the points of the hocks looking anteriorly. The stifles were in the pelvic cavity. With much difficulty and considerable traction the cow was delivered but not without an abundant hemorrhage which was arrested with cold applications. Two days after the cow was doing well.—(*Veter. Record.*)

TWO CASES OF SCROTAL HERNIA IN DOGS [*Prof. F. Hobday, F.R.C.V.S.*].—*First Case*—Two-year-old dog had scrotal hernia on the left side. Put to sleep with morphia, he is operated on. The swelling was reduced and an incision made over the external abdominal ring. The inguinal canal being thus exposed, the finger was passed into the canal to push the bowel and the omentum into the abdomen. The internal ring being then free, it was sutured with fine silk, the stitches being made close together and with great care that no space be left at either end as it is at this point that most frequently a return of the bowel takes place. The skin was sutured with silkworm-gut and covered with iodoform colloid. Complete radical recovery.

Second Case—Pekinese, two months old, had a right scrotal hernia. Operated, as in the preceding case, six or seven months later. Had several sutured abscesses. Was discharged after a month. Had diarrhea and a violent cough, which caused much strain, until one day the dog looked dull and would not move any more. On the side where the hernia had been there was a swelling of different nature, dark, tense and painful to the touch. Evidently it was a piece of bowel or omentum strangulated. Gersuny's operation is tried but fails, and castration with removal of the right testicle by covered operation was indicated. It was performed and followed by radical and complete recovery. —(*Veter. Journ.*)

ENTEROTOMY—REMOVAL OF FOREIGN BODY FROM THE BOWEL—RECOVERY [*A. Johnson, M.R.C.VS., and F. Hobday, F.R.C.V.S.*].—Japanese spaniel bitch has had no action from the bowels, notwithstanding castor oil and enemas. She vomited several times and abdominal palpation revealed the presence of a foreign body. Laparatomy was performed, the dog being put to sleep with morphia, and antiseptic care being taken. The foreign body was found twelve inches behind the stomach, the bowel there being rather inflamed. An incision through the intestines brought out a smooth pebble about one inch long and half an inch thick. A double row of Lembert's sutures was applied with fine stitches of silk. Antiseptic care was resorted to, and, with hygienic measures and careful diet, a recovery took place without any unusual event.—(*Veter. Journ.*)

DEATH FROM OBSTRUCTION OF THE BOWEL BY A PEBBLE [*D. Chasterley, M.R.C.V.S.*].—Aged fox terrier being treated for otorrhea was taken with vomiting which was relieved with subnitrate of bismuth. After a few days he is found in collapse.

almost unconscious, and extremities cold. Is revived with stimulants. Finally he dies. Post-mortem: The only lesions found were in the large intestines, which were intensely discolored and contained a large pebble one ounce in weight and one and one-half inch in diameter.—(*Ibidem.*)

Fractured Pelvis Caused Distokia [*C. W. Townsend, M.R.C.V.S.*].—Five-year-old mare cannot foal on account of abnormal small size of the pelvic cavity. She is destroyed. A large callous involving principally the pubic bones and the region round the cotyloid cavity was found, preventing the extraction of the foal. The passage was reduced by nearly one-half its normal width.—(*Ibidem.*)

Fractured Jaw in a Horse [*M. M. Hodgkins and Sons, M.R.C.V.S.*].—With a kick the jaw of a mare was fractured in two places. Holes were drilled on each side of the fracture and the pieces of bones brought into position and held together with silver wire. After one month the mare went to work, the wires being left *in situ.*—(*Ibidem.*)

Interesting Fracture Following a Previous One [*Clement Elphice, M.R.C.V.S.*].—History of a bay gelding, thirteen years old, which was a bad worker. He has had three or four falls without any discernible cause. Walks in a peculiar way, the body swaying from one side to the other, with marked platting of the fore and hind legs, and every few yards a dropping of the hind quarters. His motion looks rather that of locomotor ataxia. Backing is difficult. By rest the animal seemed to improve; but finally relapsed. He was destroyed. The post-mortem showed that all the organs were healthy. But there was a large callous on the body of the second lumbar vertebræ on the off side and another smaller of more recent formation. There was also a slight protrusion of this last into the vertebral canal.—(*Ibid.*)

Cloacal Formation in a Bitch [*H. Brassey Edwards, M.R.C.V.S.*].—Bitch, ten days old, has been unable to pass fæces and nevertheless has taken moderate amount of milk. In the perineal region the prominence usually felt in imperforated anus is missing. Dog is put to sleep. A probe passed into the vulva, a short incision is made over the perineal region above the vulva. But on dissection no trace of the rectum was found. Laparatomy was then decided upon, but before the abdomen could be opened the dog died. At the autopsy the rectum was found to have an

opening into the neck of the uterus and evidently the dog had been passing fæces and urine through a common orifice.—(*Veter-Journ.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

EPITHELIOMA OF THE MAMMÆ, GENERALIZED BY CIRCULATORY SYSTEM IN A SLUT [*Mr. A. Daille*].—An old slut had a tumor of the mammæ in the inguinal region for which she was operated. An abundant hemorrhage having occurred, another growth situated in the left flank was left for further interference. Two months after recovery from the first operation the animal had become cachectic and soon died. At the post-mortem were found on the left flank, at the deep face of the abdominal muscles, under a much-thickened peritoneum, an enormous growth weighing 3 kilogrammes 650 grammes (over seven pounds) and as big as a man's head. Suspended to the left psoas muscle and the transversalis lumborum it did not extend in the lumbo-sacral arch. The spleen was congested and had a whitish pisiform nodule, similar in aspect to the large one in the abdomen. The kidneys were full in the cortical substance with similar neoplastic nodules. The lungs contained numerous tumors also. The right semi-tendinosus muscle has one in its femoral portion, which occupies the greatest portion of the fleshy part of the muscle. A subcutaneous abscess, back of the left shoulder and due to a septic injection of artificial serum, had given rise to myositis of the olecranon muscles. The growth of the flank was surrounded by a thick fibrous capsule, sending partitions and forming lodges in which was contained the neoplastic tissue, firm, white-yellowish and lardaceous. The nodules of the kidneys and lungs had the aspect of sarcomas. Under the microscope the growths appeared made of epithelial cells, with disorganized development. It was an atypical epithelioma, having in places the structure of adeno-epithelioma.—(*Revue Veterin.*)

A CASE OF JABOT IN THE HORSE [*MM. Grosjean and Lesbougris, Army Veterinarians*].—This is a peculiar case. In 1904 a horse has colic, accompanied with abundant salivation and re-

peated movements of mastication. Gastric indigestion is suspected, treated, and in less than an hour the animal is well. Six months later, return of the trouble, but more severe. There are violent pains which last for four hours and ended by the animal coughing through the nostrils food which has not the gastric odor of that which has been in the stomach. Ruptured stomach is suspected. It was an error, as the animal gets well over his trouble. Perhaps we have to deal with a jabot of the œsophagus and hygienic dietetic treatment is prescribed. For two years the condition is about fair, the animal has spells at irregular intervals and these seem to occur only when there has been committed an error in his diet. In the last year of the life of the horse he has had about ten attacks. The last one, more severe, was accompanied with rejection of greenish spumosities, and from that day he presented all the symptoms of broncho-pneumonia which carried him off after eight days of sickness. In making the post-mortem no indication of jabot was found in the thoracic cavity. It was in the abdomen that it existed. Preceding immediately the stomach, of which it seemed to be a diverticulum, it formed an ovoid mass as big as a man's head which was hard on pressure. Its walls were formed of a very thin serous and a mucous membrane. There was no muscular tissue involved and the lesion was not a simple dilatation. It was the consequence of a hernia of the mucous through the muscular coat. —(*Revue Veterin.*)

Paraphimosis Complicated with Gangrene in a Dog [*M. Barrat*].—This is not a rare accident in the dog after coitus; although it is not generally serious it may become so, as is proved by this case. Having been left with a slut in season, and satisfied himself and her, a well-bred dog three days after, besides having paraphymosis, is in a bad condition. His nose is dry, the eyes hollow, belly retracted, no appetite. The penis, which has resumed its normal dimensions, hangs out of the sheath. greenish in some places, in others blackish. The end of the urethra alone is red. The organ is hard and gives the sensation of a dry mass. Back of the swelling of the head of the penis the preputial ring has given rise to a strangulation sufficient to bring on mortification of some tissues but not enough to arrest micturition. The dog urinates normally. Treatment: The dog was secured, the mortified and ready to slough tissues are removed or excised, the prepuce is incised so as to enlarge its entrance and permit the return of the entire penis. Daily wash-

ings and injections of phenic acid water with substantial tonic treatment brought out a rapid recovery.—(*Ibidem.*)

HYDROMETRY OR HYDROPS UTERI IN A CAT [*Mr. P. Leblanc*].—Rather uncommon pathological case. A female cat that has had several litters of kittens shows, since several weeks, a much-enlarged abdomen. She eats well, has no cough and is otherwise in apparent good health. However, she has a peculiar appearance. She looks like a balloon. Her abdomen has the shape of a spheroidal mass no matter in what position the cat is placed. The abdomen is not drooping nor fluctuating, as in ascitis. In feeling the abdomen one gets the sensation not of a liquid mass collected in the peritoneum, but more of a big cystic tumor or a large collection occupying in all probability the uterus. An exploring puncture allows the escape of one litre of citrine, aqueous liquid, odorless, but not having altogether the characteristics of an ascitic liquid. The cat is destroyed. The lesions of post-mortem revealed an enormous intrauterine collection. The uterine horns are enormous, communicate together at their emergency from the body of the uterus, and both contain one litre of liquid similar to the one obtained with the puncture. The walls of the uterus are thickened; the ovaries and the other organs are healthy.—(*Journ. de Zootechin.*)

GANGRENOUS PNEUMONIA COMPLICATED WITH SEPTIC LOCALIZED AND FIBRINOUS PLEURISY—POST-MORTEM [*A. Chanier, Army Veterinarian*].—*Paulonia* was a six-year-old mare, which was under treatment for a traumatic exudation of the left haunch, which had been treated by puncture with the actual cautery and a blister. Nothing abnormal occurred for a few days when, towards the tenth day, she looked dull and low-spirited. Perhaps she had been cast during the night, as the hairs of the tail are roughened and the wound of the cautery and blister is raw and bleeding. The temperature is only a little higher. Two days later the aspect has become alarming. Anorexia, great thirst, conjunctiva injected, the forehead is hot while the ears and extremities are cold; serous discharge escapes from the nostrils. No cough, either spontaneous or by pressure of the throat. Breath odorless. On percussion there is an area of tympanic resonance; respiratory murmur is absent in the lower third of the left lung; no pathological bruit is detected. Heart sounds plainly heard and normal. No sound by succussion. Percussion gives the sensation of subcostal liquid collection. Exploring puncture gives escape to 1400 grammes of sero-blood clear

fluid, after which the mare seems relieved. Two days later relapse. The animal throws all her weight on the right lateral biped. There is great hypersensibility of the left costal walls. Several clots of blood have been expelled through the nostrils. Breath is still normal. The left tympanitic resonance still exists. Respiration is louder on the right. New thoracenthesis gives out only 1250 grammes of colored fluid. By exclusion in the differential diagnosis, localized intrathoracic effusion is diagnosed. The mare died after five days of illness.

Post-mortem—Pulmonary lesions. On the anterior lobe of the right lung there is a spherical induration as big as a child's head, composed of a central zone and a peripherical. This is formed by the splenization of the lung tissue; the other is a center of pulmonary gangrene, filled with sanious, fœtid mush, where are found bronchia and blood vessels more or less necrosed. The left lung is atelectasied in its antero-inferior region. At the lower part of the gangrenous center there is an opening going through the mediastinum into the left pleural sac, and, hence, formation of a large suppurative collection whose cavity is lined by a fibrino-purulent layer, here yellowish and there red brown or dark gray. The heart is normal. Pericardium contains 500 grammes of cloudy, reddish fluid. There were also abdominal lesions. The kidneys and the liver had undergone softening and degeneration. There were also hemorrhage, perineal and subperitoneal; also hyperæmia of the pelvic curvature of the large colon, ecchymotic spots in the mesentary and a wide subcutaneous hemorrhage in the right flank. The muscles were softened and discolored, especially those of the hind leg. The march of these manifestations must have occurred as follows: (1) Localized infection of the right lung by a septic foreign body; (2) Gangrenous pneumonia followed by perforation of the lung and anterior mediastinum with infection of the left pleural sac; (3) General intoxication ending in death.—(*Revue Gener. de Medec. Veter.*)

Hypodermic Injections of Sulphate of Veratrine [*Mr. Detchevers*].—Some years ago the author published an article on the use of that drug for post-partum inflammatory mammitis. It is a method which has given him and many others excellent results and it deserves to be more generalized. Post-partum mammitis implies with the arrest of milky secretion often the loss of a part of the udder and not rarely that of the life of the ani-

mal. Mr. Detchevers has resorted to those injections as prophylactic measures and has had good success. To be efficacious the injection must be made during the febrile initial stage as much as possible. After it, often as early as the next day, the mammitis is on the road to resolution. In severe cases it can be renewed without fear. Employed in full febrile stage it has the advantage of not interfering with the milky secretion, not reducing the appetite, nor the rumination. As prophylaxy, the injection must be made two or three days after calving, and it can be renewed every ten days during the critical period; that is, twenty or thirty days after parturition. The dose is from 5 to 8 centigrammes, which can be raised to 10 for large animals. —(*Semaine Veter.*)

GERMAN REVIEW.

By J. P. O'Leary, V. M. D., Bureau of Animal Industry, Buffalo, N. Y.

Investigations Concerning the Patho-Histological Changes in the Lens in the Various Forms of Cataract in the Horse [*Dr. Ferd. Mette*].—The author had examined 19 eyes of 13 horses which suffered from cataract. The cause of the cataractic clouding was found in previous attacks of periodic ophthalmia (*cataracta symptomatica*). In some cases the formation of the cataract was attributed in part to old age (*cataracta senilis*). The well-known classifications: clouding of the lens (*cataracta capsularis*), clouding of the lens substance (*cataracta lenticularis*), clouding of the lens capsule and substance (*cataracta capsulo-lenticularis*), the author found the following exceptions: 1st. The pathological changes in the lens capsule consisted: (a) deposits on the anterior of the capsule, (b) the formation of fibrous tissue on the inner surface of the capsule, (c) proliferation of epithelium on the inner surface of the lens. In a case of cataracta symptomatica, we found on the inner surface of the anterior capsule a deposit of organized fibrous tissue which evidently had formed through fissures in the capsule of the lens. 2nd. On the substance of the lens the following anatomic conditions were perceptible:

(a) Extensive sclerosis and destruction of the lens fibres.
(b) Vacuole formations.
(c) Morgagnic bodies.

(d) Fatty degeneration of the lens fibres.
(e) Cholestearin crystals.
(f) Calcareous deposits on the lens substance.
(g) Hæmatoiden crystals.
(h) Connective tissue degeneration.

3d. In the cataracta capsulo-lenticularis, we find anatomic changes in the lens capsule and substance. In their nature they coincide with the lesions described under 1 and 2. All the above-mentioned changes are not observed separately, but are found more or less simultaneously on the lens capsule and lens substance.—(*Monatsheft für praktische Tierheilkunde, XVIII. Band.*)

An Outbreak of Herpes Tonsuraus and Trichorrhexis Nodosa, Contagious in Character [*Vet. H. Schindler and J. Moser*].—These diseases appeared among the remounts of the 5th and 15th dragoon regiments. Herpes tonsurans affected the greater number of horses in a mild form, and was treated successfully with tincture of iodine. Trichorrhexis nodosa attacked 61 per cent. of the remounts. The symptoms were characteristic, particularly on the hairs of the tail, and, in some cases, on those of the mane. Numerous whitish-gray spots and nodular swellings were perceptible, at which point the hairs were easily broken. The belly hairs were ravelled and appeared like a hair brush. The body hairs were not affected. In some cases the tail became denuded of hair to such an extent as to deserve the name of rat tail for considerable time.

Carboneum Sulphuratum in the Treatment of Distomatosis [*Vet. R. Floris, Györ*].—During the current year great floods occurred in Hungary, and, as a result, distomatosis appeared very frequently in many localities. Hitherto no remedy had been discovered which when given internally would destroy and expel the liver fluke. The treatment of distomatosis formerly was limited to the liberal use of good, nourishing food in conjunction with bitter medicinal agents and the mineral salts. In many cases 50 per cent. of the animals affected died. In the beginning of this year Chief Veterinarian Julius Taar published the results of his experiments with carboneum sulphuratum on horses affected with intestinal worms. Floris made similar experiments in cases of distomatosis. He prescribed carboneum sulphuratum in gelatine capsules, 10-15 grammes *pro dosi.* The succeeding day the fæces were colored a dark brown and had a disagreeable, penetrating odor. At each defecation 5-10 dis-

tomum were visible in the excrement. The above medication was repeated three to four times a week for animals of all ages. During the course of the treatment the animals showed good appetite. No ill-effects from the CS_2 were observed. The treatment is very inexpensive, one dose costs only a few cents.—(*Allatorvosi Lapok*, 1907, *No.* 45.)

NEWS FROM GEORGIA.—The work of the State Veterinary Association of Georgia has been rewarded by the enactment of a law creating a State Board of Veterinary Examiners and regulating the practice of veterinary medicine, this act being passed by the Legislature on August 10th, and approved by the Governor on August 17th. The law requires the endorsement of the State Veterinary Association for the five members of the Board. The candidates were elected by the association on September 3, and were confirmed and officially appointed by Governor Smith on September 17th, being Drs. Anderson, Jago, Jolly, Morris and Schwencke.

The new examining board met for organization on October 7th, drew lots for terms of office and elected Dr. Anderson, of Macon, president; Dr. Jago, of Athens, vice-president; and Dr. Schwencke, of Thomasville, secretary. The first regular examining session of the board will be held in Atlanta, on December 22d, to issue licenses for practice in Georgia. The law requires all persons who profess to be veterinarians and who charge for their services, to be properly licensed, under penalty of fine and imprisonment. The fee required for examination is $10.00, and the license when once issued is permanent. Candidates holding diplomas from recognized veterinary colleges are licensed upon payment of the same fee, by showing proof of graduation.

The examining board depends solely upon the fees for travel and other expenses of the work, so the task will be largely a labor for the good of the cause. But the members of the profession are elated over this recognition and help, and feel confident that it will be the source of much good in the near future.

During the same session of the Legislature, a bill for the establishment of a State Live Stock Sanitary Board and appointment of a regular State Veterinarian, met an untimely death at the hands of the Agricultural Committee, and was reported unfavorably to the House, on account of an appropriation clause of $3,000. A similar bill will be introduced at the next session, which we sincerely trust will meet with a better fate.

CIVIL SERVICE EXAMINATIONS.

EDITOR.

OFFICE OF EXPERIMENT STATIONS, DEPARTMENT OF AGRICULTURE.

The United States Civil Service Commission announces an examination on November 24-25, 1908, at the places mentioned in a list printed by the Commission, to secure eligibles from which to make certification to fill a vacancy in the position of editor in charge of the departments of entomology, economic zoology, and veterinary science, in the Experiment Station Record, Office of Experiment Stations, Department of Agriculture, at $1,500 per annum, and vacancies requiring similar qualifications as they may occur in that Department.

The examination will consist of the subjects mentioned below, weighted as indicated:

Subjects.	Weights.
1. Spelling (twenty words of more than average difficulty)	3
2. Arithmetic (fundamental rules, fractions, percentage, interest, discount, analysis, and statement of simple accounts)	3
3. Penmanship (the handwriting of the competitor in the subject of letter-writing will be considered with special reference to the elements of legibility, rapidity, neatness, general appearance, etc.)	3
4. Letter-writing (a letter of not less than 150 words on some subject of general interest. Competitors may select either of two subjects given)	6
5. Copying from rough draft (the writing of a smooth copy of rough-draft manuscript, including the correction of all errors of spelling, capitalization, syntax, etc.)	5
6. Editing and abstracting	10
7. Proof-reading and indexing	10
8. Special subject—(*a*) Economic zoology and veterinary science, or (*b*) Animal husbandry and dairying	40
9. Training and experience (rated on application)	20
Total	100

A rating of at least 70 per cent. in the special subject chosen is required for eligibility.

Some knowledge of French and German is required, and the candidate's proficiency in these languages will be considered in the rating for training and experience.

The position to be filled as the result of this examination requires a man of special qualifications, including not only fundamental knowledge in the subject chosen, but considerable advanced training, and general familiarity with its literature.

Two days will be required for this examination.

Age limit, 20 years or over on the date of the examination.

This examination is open to all citizens of the United States who comply with the requirements.

This announcement contains all information which is communicated to applicants regarding the scope of the examination, the vacancy or vacancies to be filled, and the qualifications required.

Applicants should at once apply either to the United States Civil Service Commission, Washington, D. C., or to the secretary of the board of examiners at any place mentioned in the list printed by the Commission, for application Form 1312. No application will be accepted unless properly executed and filed with the Commission at Washington. In applying for this examination the exact title as given at the head of this announcement should be used in the application.

As examination papers are shipped direct from the Commission to the places of examination, it is necessary that applications be received in ample time to arrange for the examination desired at the place indicated by the applicant. The Commission will therefore arrange to examine any applicant whose application is received in time to permit the shipment of the necessary papers.

CHIEF, CATTLE AND GRAIN INVESTIGATION LABORATORY.

The United States Civil Service Commission announces an examination on November 9, 1908, to secure eligibles from which to make certification to fill a vacancy in the position of chief in the cattle and grain investigation laboratory, Bureau of Chem-

istry, Department of Agriculture, at $2,500 per annum, or less, and vacancies requiring similar qualifications as they may occur.

Men only will be admitted to this examination.

Competitors will not be assembled for any of the tests.

The examination will consist of the subjects mentioned below, weighted as indicated:

Subjects.	Weights.
1. Education and training	40
2. Practical experience in the examination of cattle food materials, grains, cattle remedies, and in the enforcement of state feeding-stuff laws	40
3. Original contribution to the literature of cattle food and grain analysis and composition, or essay on "The Enforcement of a Feeding-Stuff Law"	20
Total	100

Age limits, 25 to 45 years on the date of the examination. The examination is open only to applicants of mature years, whose education and training are such as to enable them to carry on and direct original work in cattle foods and grains and to aid in administering the National Food and Drugs Act in so far as it applies to cattle foods.

This examination is open to all ctizens of the United States who comply with the requirements.

This announcement contains all information which is communicated to applicants regarding the scope of the examination, the vacancy or vacancies to be filled, and the qualifications required.

Applicants should at once apply to the United States Civil Service Commission, Washington, D. C., for application Form 304 and special form. No application will be accepted unless properly executed and filed, in complete form, with the material required, with the Commission at Washington, prior to the hour of closing business on November 9, 1908. In applying for this examination the exact title as given at the head of this announcement should be used in the application.

THE veterinarians of Saskatchewan will approach the new legislature and endeavor to get a bill through the coming session. At the present time an ordinance is in force admitting veterinarians to practice on payment of a fee of $15 provided they are graduates of a college approved by the A. V. M. A.

BIBLIOGRAPHY.

ANIMAL PARASITES AND PARASITIC DISEASES. By B. F. Kaupp, D.V.S., Instructor in Parasitology, Kansas City Veterinary College; late Veterinary Inspector, Bureau of Animal Industry, United States Department of Agriculture; Secretary of the Missouri Valley Veterinary Association; late President of the Missouri State Veterinary Medical Association, etc. 207 pages, 73 illustrations. Chicago. Alexander Eger, 1908.

Parasitism is becoming a highly important study accessory to the vast field of bacteriology and bio-pathology, a thorough knowledge of which is essential to the veterinarian whether in private practice or engaged in veterinary sanitary work.

The study of parasites as the cause of irritation, depletion and exhaustion interfering directly with the functions of the organs they invade is not sufficient for the modern practitioner. He must know in what way they contribute to the production of toxins which interfere with vital functions, but what most concerns the sanitarian is the fact that certain parasites are the bearers of dangerous microbian infection from animal to animal and from animal to man.

Students have been greatly handicapped in pursuing the study of animal parasites and parasitic diseases for the want of a suitable text-book, having to depend largely upon such incomplete notes as they were able to take from lectures.

Therefore, a book that gives the essentials in a concise and comprehensive manner will be helpful to the student and appreciated by the profession in general.

While Dr. Kaupp, in his treatment of the subject, has made no attempt at exhaustiveness, he has been remarkably successful in presenting the essentials of parasitology in a simple and concise manner, adapted to the student and others interested in the subject. He has condensed much valuable data in one small volume and his classification is comprehensive and well adapted for the purposes intended.

Dr. Kaupp has had twelve years' experience in teaching parasitology. In the preface to his book he says that he has long felt the want of a concise text-book incorporating the names of the common parasites of domestic animals. The work is divided into four chapters, treating the following subjects, viz.: External parasites, internal parasites, protozoa and the preparation of specimens.

The names of parasites are arranged in tabular form at the beginning of each of the first three chapters. In the first column of the table will be found the Branch; in the second the Class; in the third the Order; in the fourth the Family, and in the last the Genus and Species, names by which we know the parasites. By reference to this table one can trace each species at a glance down through the classification to the starting point—the Branch.

Each parasite is dealt with in the order of the tabulation.

The facts about each are noted under the headings: Synonym, Distribution, Description, Life Cycle, Animals Infested, Parts Infested, Conditions Produced (pathological anatomy), Symptoms, and Treatment when the latter is of any avail.

His student, Mr. C. D. Folse, has greatly aided the author in illustrating the book by making pen drawings from the more common parasites in his collection. These are natural size and according to measurements.

The photomicrographs are made by the author himself with an ordinary kodak over the ocular lens of the microscope and given time exposure.

In short, Dr. Kaupp's book contains in brief all about the common parasites and is worthy a place in every veterinarian's library. The work of the publisher leaves nothing to be desired, the paper, letterpress, illustrations and binding being uniformly good.

Dr. Kaupp has recently accepted a professorship in the Veterinary Department of the Colorado State College of Agriculture and Mechanic Arts at Fort Collins, Colorado. We bespeak a large circulation for his excellent book.

THE Veterinary Department of the Colorado Agricultural College is now making and distributing Black Leg Vaccine to the farmers and stockmen of Colorado. They expect very soon through the Experiment Station to take up the work of Hog Cholera Serum as recommended by the Department of Agriculture.

THE Colorado Veterinary Medical Association met at the State Capitol, Denver, on the 24th ult., to consider needed legislation. The law as it now stands permits anyone to practice veterinary medicine, surgery or dentistry, providing he does not in any way advertise as a veterinarian.

The law has proved to be entirely inadequate, and an amendment will be asked for.

SOCIETY MEETINGS.

INTERNATIONAL CONGRESS ON TUBERCULOSIS.

The REVIEW begs to offer its readers a brief report of the transactions of the International Congress on Tuberculosis held in Washington, D. C., from September 28 to October 12, and especially of those of Section VII., in which veterinarians of national and international reputation took leading parts. The sessions of this section, which were of the highest value, dealt with the very important subject of "Tuberculosis of Animals and Its Relation to Man." It is not necessary to dwell upon the significance of the latter portion of this subject, but it should be mentioned that there was no question discussed at the congress in which a greater interest was manifested than in this one.

Koch's position on the question of the relationship of bovine and human tuberculosis is well known to all veterinarians and with his presence at this congress it was thought probable that the relation and the danger of animal tuberculosis to man, whether through milk or otherwise, would be definitely established. This phase of the subject as well as the economical side of animal tuberculosis chiefly concerned Section VII., and we cannot refrain from congratulating the veterinarians who participated for the excellency and high character of their work, which was noted all through the transactions. It is difficult now even to estimate the amount of benefit which will be derived from this congress. However, it seems from the character of the papers and discussions that with the energetic and thorough work now undertaken by the municipal, state and federal health and sanitary departments, it will be possible not only to check the spread of tuberculosis but to considerably diminish it.

The opening session of the scientific program of the congress took place on September 28, on which occasion addresses were made by the official representatives of the various foreign countries. Secretary Cortelyou presided as a representative of President Roosevelt, who was the president of the congress. This session was very impressive and will be, without a doubt, a pleasant recollection to all those who were in attendance. Practically every civilized nation was represented, sending their greatest specialists for the good cause of aiding in the determined fight against tuberculosis, the greatest menace to the development and prosperity of every country.

After the ceremonies of the formal opening were concluded the various sections went to work in the different halls to carry out their extensive programs. A good-sized hall containing 150 chairs was provided for Section VII., and it was gratifying to note the great interest manifested in the work of this section, as there was scarcely any period during the meetings when all of the chairs were not occupied and frequently "standing room" only was to be obtained.

Section VII. had on its program a large number of papers which it shortly became evident would require more time to present than was originally planned. In spite of the time limits given to the readers of papers and to the discussions, two extra sessions on Saturday, October 3, had to be arranged in order to conclude the program, and at the last session one of the most important phases of tuberculosis was taken up, namely, that of immunization. It would have been an irretrievable loss to those in attendance if Dr. Pearson and Professor Heymans could not have been heard on this subject and their addresses were greatly appreciated by all. Following the precedents of other international congresses to select honorary presidents of each section, the following were elected for Section VII.: Prof. Arloing, France; Dr. Piot Bey, Egypt; Prof. Bang, Denmark; Prof. Heymans, Belgium; Dr. Rutherford, Canada; Prof. Wladimiroff, Russia; Prof. Hutyra, Austria; Prof. McFadyean, England, and Prof. Ostertag, Germany.

Dr. Pearson, as president of the section, opened the first session with very appropriate introductory remarks in which he pointed out the importance of tuberculosis of animals from an economical standpoint and also from its relation to the public health. The first subject taken up was that of the "Prevalence and Economics of Tuberculosis in Animals." Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, opened the series of papers on this subject and revealed astounding facts about the prevalence of tuberculosis in animals and the great financial losses occasioned by it.

Dr. Melvin said in part:

"While the saving of human life affords the highest motive for combating tuberculosis, the prevention of financial loss is alone a sufficient reason for undertaking the eradication of the disease from farm animals. Statistics of the United States Federal meat inspection for the fiscal year ending June 30, 1908, covering 53,973,337 animals, or more than one-half of all those

slaughtered for food in the country, show the following percentages of tuberculosis: Adult cattle, 0.961; calves, 0.026; hogs, 2.049; sheep and goats, 0. The proportion of tuberculosis is probably higher in animals slaughtered without inspection. Reports of tuberculin tests made in the 15 years from 1893 to 1908 by Federal, State and other officers with tuberculin prepared by the Bureau of Animal Industry have been carefully analyzed and tabulated. Out of 400,000 cattle tested (mostly dairy cattle) there were 37,000 reactions, or 9.25 per cent. From these two classes of statistics it is concluded that on an average about 10 per cent. of the milch cows, 1 per cent. of other cattle, and 2 per cent. of the hogs in the United States are affected with tuberculosis, the average percentage for all the cattle being estimated at 3.5.

"The accuracy of the tuberculin test has been confirmed in a remarkable way by post-mortem examinations. Out of 23,869 reacting cattle slaughtered, lesions of tuberculosis were found in 23,585, a percentage of 98.81. Properly prepared tuberculin applied by a competent person is therefore shown to be a wonderfully reliable agent for diagnosing tuberculosis. In cases where the test appears to give unsatisfactory results this is usually due to the use of a poor quality of tuberculin or to ignorance or carelessness in applying it.

"The economic loss on account of tuberculosis in food-producing animals is heavy. The loss on animals in which tuberculosis is found in the Federal meat inspection is estimated at $2,382,433 annually, and if the same conditions were applied to animals slaughtered without Federal inspection the annual loss on all animals slaughtered for food in the United States would be increased to $4,102,433. The stock of animals on hand is also depreciated in value because of tuberculosis. Assuming that living tuberculous milch cows are annually depreciated to the extent of one-tenth of what the loss would be if they were slaughtered, other cattle one-third, and hogs one-half, the total animal depreciation amounts to $8,046,219. The annual loss from decrease in milk production is estimated at $1,150,000, and there also is some loss from impairment of breeding qualities. Taking all these items into account, the aggregate annual loss because of tuberculosis among farm animals in the United States is estimated at not less than $14,000,000.

"Such heavy financial losses make the eradication of tuberculosis from farm animals very desirable purely as an economic

matter. As the disease is found principally among cattle and hogs, and as most of the infection in hogs is derived from cattle, the main effort should be directed against the disease in cattle. Among the measures proposed are the following: Live stock owners should be educated by means of official publications, the agricultural and general press, lectures at farmers' institutes. Public authorities should make a systematic effort to determine to what extent and in what localities the disease exists, and should apply the tuberculin test generally and systematically to cattle in sections where this seems desirable. Reacting animals should be slaughtered under competent veterinary inspection, so that the loss may be minimized by passing carcasses for food where the infection is so slight that this can safely be done; dangerous carcasses, of course, to be condemned. In the case of valuable breeding animals where slaughter would involve great sacrifice, the Bang system of segregation may be used. A system of tagging all cows sent to market is advocated, so that when animals are found tuberculous in the meat inspection they may be traced back to the place of origin, centres of infection located, and steps taken for eradication. The Bureau of Animal Industry is already co-operating with the authorities in some states in reporting and tracing the origin of tuberculous animals. Each state should require that all cattle brought in for breeding or dairy purposes shall have passed the tuberculin test.

"As the eradication of tuberculosis is largely a public health measure, it is only reasonable that the persons whose cattle are slaughtered should be paid indemnity, at least in part. This is not only just, but is absolutely essential if the co-operation of cattle owners is to be secured. Several states already have provisions of this character. The benefits to follow from the eradication of tuberculosis from farm animals are so great and so obvious that the necessary expenditures, even though they must be heavy, may be regarded as a highly profitable investment."

Other excellent papers on this subject were given by Dr. O. E. Dyson, Dr. W. H. Dalrymple, Dr. C. A. Cary, Dr. L. A. Klein, Dr. M. E. Knowles, Dr. George S. Baker, Drs. A. R. Ward and C. M. Haring, and by Mr. Jesse E. Pope.

The discussions on these papers were animated and brought out very interesting data on the subject, amongst those who participated in the discussions being Prof. Arloing of Lyons, France; Prof. Heymans of Ghent, Belgium, and Prof. Bang of Denmark, and the pleasure of the audience in listening to the expression

of views of such eminent men was manifest. It would require a very lengthy description to go into the details of the sessions and therefore only a very brief resume will be given.

At the third session, "The Pathology and Bacteriology of Tuberculosis" was the subject presented. Papers were read by Drs. W. Reid Blair, C. Y. White, Herbert Fox, E. C. Schroeder, Alfred F. Hess, Sesco Stewart, A. T. Kinsley, J. R. Mohler and H. J. Washburn. The discussions which followed were of the greatest interest and amongst those participating one could observe many noted medical and veterinary scientists and sanitarians of this and foreign countries.

In the fourth session, which was held jointly with Section I., "The Relationship Between Tuberculosis of Animals and Man," was presented, and as it was generally known that Prof. Koch was to open the series of papers, the large assembly hall with a seating capacity of 2,000 was provided for the occasion. Long before the meeting was called to order the hall was filled to its entire capacity and everybody listened attentively to the paper of Prof. Koch on "The Relation of Bovine and Human Tuberculosis," in which he practically repeated his statements of 1901. He went so far, however, as to admit that bovine bacilli may be found in certain forms of tuberculosis of man and he furthermore stated that he did not deny the possibility of one type of the tubercle bacillus becoming transformed into another type. He was followed by Prof. Theobald Smith, who read a paper on "The Relation of Human and Animal Tuberculosis," with special reference to the question of the transformation of human and other types of tubercle bacillus, in which he stated that about one-half of all the cases of tuberculous adenitis and abdominal tuberculosis of children was caused by bovine bacilli. Then the more strenuous opponents of the Koch theory took the stand and paper after paper was read in which absolute facts were presented which proved without a possibility of doubt that in many cases, especially in tuberculosis of children, the infection was caused by the tubercle bacillus of the bovine type. We refer to the papers of Prof. G. Sims Woodhead of England, Prof. S. Arloing of France, Drs. Fibiger and Jensen of Denmark, Dr. M. P. Ravenel, Dr. Nathan Raw of England, Dr. A. P. Lewis, Dr. Charles W. Duval, Dr. William H. Park, Dr. Charles F. Dawson, Dr. R. R. Dinwiddie, and Drs. Davalos and Cartaya also presented papers at this session.

It was late in the afternoon before this meeting adjourned, and the discussion was taken up the following day at a session at the New Willard Hotel, where about fifty noted scientists expressed their views on the subject. While there were no resolutions adopted it was almost uniformly recognized by all participating in this session that there is a real danger of human infection from bovines which should be recognized by all sanitarians. Moreover this view was crystallized in a resolution unanimously adopted by the entire congress on the closing day, as follows:

"*Resolved,* That preventive measures be continued against bovine tuberculosis and that the possibility of the propagation of this infection to man be recognized."

The fifth and sixth sessions were given to the diagnosis of tuberculosis in animals. This important subject was splendidly treated in the papers by Dr. A. W. Bitting, Dr. A. T. Peters, Dr. George B. Jobson, Dr. S. B. Nelson, Drs. D. S. White and Eugene McCampbell, Prof. J. Lignieres of Argentina, Prof. G. Moussu and Dr. Ch. Mantoux of France, and Dr. Burton R. Rogers. The papers were all ably discussed and in general tuberculin appeared to have received additional support as a reliable diagnostic agent. Prof. Arloing expressed his faith in tuberculin and stated that in all cases where a tissue reaction is obtained we can assert that there is a tuberculous infection of the animals. A negative finding on macroscopical examination of reacting animals does not mean the absence of the disease, as in such cases a microscopical form of the disease is present which can only be determined by inoculations into test animals. Prof. Heymans has also found that a large number of reacting animals fail to show any macroscopical lesions, but his experience proved that the disease in such cases is present, which to him is indicative of the imperfectness of the macroscopical examination. The "Control of Tuberculosis of Animals" was taken up in the seventh and eighth sessions, and this subject is probably of the greatest interest to all those who are occupied with the problem of tuberculosis. Prof. Bang presented his paper on this occasion on "The Control of Tuberculosis of Cattle in Denmark,"* showing the splendid results which have been obtained by his system. He could not see why the Bang method could not be followed in this country with the same advantages. Papers were also presented on this phase of tuberculosis by Drs. J. G. Rutherford, Austin Peters, C. J. Marshall,* Piot Bey of Egypt, John M. Deering, V.

* Published elsewhere in this number of the REVIEW.

A. Moore, M. H. Reynolds, D. Arthur Hughes, J. W. Connaway and Otto G. Noack.

The animated discussion of this part of the program required all the time allowed for the conclusion of the program, and there was still an important subject to be taken up, namely, "The Immunization of Cattle Against Tuberculosis," which was accordingly postponed for the following day, the subject being presented in two extra sessions. Dr. Pearson presented his method of immunization with which a relative immunity can be established in cattle and which protects the animals from the disease for from two to three years. Dr. Pearson was heartily congratulated on his success in this line by Prof. Bang and Prof. Arloing. Great interest was manifested in Prof. Heymans' vaccination against tuberculosis of bovines, which he not only described theoretically but also demonstrated the method with a splendid exhibit, and besides on live animals at the Experiment Station of the Bureau of Animal Industry at Bethesda, Maryland. All those who had the pleasure of seeing the professor demonstrate this method of vaccination were greatly impressed with its simplicity.

The remarkable success which he has achieved by his method in Belgium makes it seem very promising as a practical way of controlling that disease in animals. Thus far he has vaccinated over 40,000 animals, during a period of four years, and in some of the herds where previously to the vaccination 60 per cent. were tuberculous this number has been reduced in the mentioned period to 28 per cent.

This method will soon be given an extensive trial in this country in order to test its efficiency and also its practicability in meeting the conditions existing here.

It might also prove of interest to mention the excellency of the educational and pathological exhibition as there was never placed before the public a more complete exhibit than that presented at this congress. Of the total number of exhibitors, 312 were from the United States and 126 from foreign countries. Two hundred and twenty-two were collective contributions from associations, societies and other corporate bodies, and 216 were from individual members of the congress. Of the 222 collective contributions, those from the United States numbered 170, and those from Europe or from other parts of America numbered 53. Of the 216 individual exhibits, 142 were from the United States and 74 from other American countries and Europe.

The exhibition included demonstrations and clinics, accompanied by stereopticon illustrations and popular lectures. Of the pathological exhibits especially beautiful specimens were displayed by the Boston University, Pennsylvania Live Stock Sanitary Board, Phipps Institute, Canada, England, Germany, Iowa, Michigan, Cornell University, the Bureau of Animal Industry, etc.

Particular interest was manifested in the fresh tuberculous specimens exhibited by the Bureau of Animal Industry in long sanitary refrigerators with glass sides and tops. In awarding prizes for the above exhibits a special gold medal was given to the National Bureau of Animal Industry for having the best collection of pathological specimens at the exhibition.

Referring to the social side of the congress, the visiting members were well taken care of, and especially does this apply to the foreign delegates, as one of them remarked that, judging from the invitations to social functions, it appeared as if the local members thought they came here solely for social pleasure, with no other thought in mind. Receptions, dinners, banquets, smokers and other entertainments were in evidence all through the congress.

Especially elaborate was the banquet given by the Secretary of State to the foreign delegates. Then there was also a smoker at the New Willard Hotel, given by the members of the District of Columbia, which was attended by over 1,800. This proved a splendid opportunity for the foreign and American scientists to discuss affairs in an unconventional social way, and they were at the same time given a good example of democratic Americanism and American hospitality. A smoker was also given at the University Club by the veterinarians of America to the foreign visitors. On this occasion a social exchange of opinions was thoroughly enjoyed with our noted foreign confreres. There were present at the gathering Prof. Arloing of France, Prof. Bang of Denmark, Prof. Wladimiroff of Russia, Dr. Piot Bey of Egypt, Prof. Fibiger of Denmark, Prof. Heymans of Belgium, Dr. Freund of Germany, Dr. Eastwood of England, and others.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

Discussion on Report of Committee on Intelligence and Education.

The interest manifested by the profession generally in the report and recommendations of the Government Committee on Veterinary Education, appointed by Secretary Wilson, to in-

vestigate the veterinary colleges of the United States, is so great that we are printing in the following pages the stenographic report of the full discussion of the report of the Committee on Intelligence and Education,* by Dr. Tait Butler, before the forty-fifth annual meeting.

DR. TAIT BUTLER: Mr. Chairman—I do not wish to take up the time of the association, but it seems to me necessary that something further be said on this report. I am in the unfortunate position of having been one of the members of the committee appointed by the Secretary of Agriculture and also of having been delegated by the committee to make any remarks that it might be necessary to make in this convention regarding this report, and I want a little time, if you will bear with me, to discuss some of the remarkable, even marvelous statements which have been made in this report on "Intelligence and Education."

I want to say that there is much of this report which I endorse and much which is on a high plane for which the chairman is to be congratulated, but there are also many statements made in connection with the report of the Committee on Veterinary Education, appointed by the Secretary of Agriculture that I must take exception to, and I shall endeavor to discuss them on as high a plane as has been adopted by Dr. Pearson.

The first criticism was that no statistics of the different colleges were published. My own opinion is that the committee obtained information that it would not be practical to publish; that the committee obtained information which it was necessary for it to have in order to do the work it was instructed to do, which it would not be proper to publish. I do not believe that such statistics as enumerated by the chairman of the Committee on Intelligence and Education would be of any material benefit to any man in judging of the standing and the position of the veterinary colleges. That is, I believe our committee had more information than the statistics asked for by Dr. Pearson would supply and that we had sufficient information to judge of the merits of the schools.

Now, then, as to the courses of study. Dr. Pearson has paid himself the compliment of saying that the course of study outlined by Secretary Wilson's committee was modeled after the one which he suggested last year. While this is plainly not so, I won't hurt his vanity by saying it was not; but if it was

* Report of Committee published in October REVIEW, page 91.

so modeled, is it not remarkable that it should receive such severe criticism from its real author?

Dr. Pearson tells us that if the course that is recommended in this report is maintained all of the colleges will have to change to comply with the letter of the law. I want to say candidly and frankly to the members here, and I say it without prejudice, that there is not a single one of the colleges but what ought to change. (Applause.) There is not a single one of them that will not be benefited by making these changes wherever they fall below the recommendations of this committee. Dr. Pearson seems to see serious trouble ahead, if the colleges are required by the Department of Agriculture to comply with the "letter" of the recommendation of the committee appointed by Secretary Wilson. There is no danger in the enforcement of these recommendations. "You can't enforce the letter of the law" is simply a favorite expression of people who want to mystify their hearers. Why, gentlemen, no general law was ever promulgated that was ever enforced to the letter. It is not practical to do it. It is not done. The main purpose of the administration of such a law is for the general good. Justice is the cardinal principle of the administration of all law, and it is not possible nor practical in every case to enforce a general law to the letter. It is absurd to object to any law, and certainly to such a general one as this, because the letter of it cannot be enforced. You would object to all law if you did, for all laws are broken and none enforced to the letter.

Now, then, I do not know what the Secretary of Agriculture will do regarding the carrying out of the recommendations of his committee. I do not know what his advisers will do, but I believe that he has it within his power to command the services of men that are just and (I hope Dr. Pearson will pardon me for saying it) as competent as any of those who are criticising him for his actions.

Now, then, we come to what Dr. Pearson calls the essence of his contention; namely, that the Secretary had not the right to do what he did. Gentlemen, if you followed the reading of that report closely you will have observed that in one place it was stated that he had not the right to do a certain thing; and then in a few sentences afterwards it was deliberately stated that he did have the right to do that same thing; that he had not the right to say what the length of the course should be, and then it was admitted that he did have the right to say what

courses, and what the length of the courses should be for the employees of his department. Now, gentlemen, it seems to me that we might just as well, right now, thoroughly understand what this report really is, what were its purposes and what its aims. All that the report purports to be is a measure for judging the colleges or a minimum standard for the guidance of the Secretary of Agriculture in the selection of men for employment in his Department. That is all it is and all it was intended to be. How can there be any question of the right of the Secretary of Agriculture to fix a standard of qualifications for the employees of his own Department? It seems to me that any other view is ridiculous.

It is true that Dr. Pearson has admitted this, but in the next breath he has denied it. For instance, it is stated that he did not have the right to say how anatomy should be taught, and in another sentence it is admitted that he did have the right to require that it should be taught to applicants for employment, in a *competent* way. Dr. Pearson also tells us that the committee was not competent to say how anatomy should be taught, but I am of the opinion that the committee was as competent to say how anatomy should be taught as Dr. Pearson is to judge of the competency of the committee, for on that committee was a man who is recognized as one of the best teachers of anatomy on the American continent, and a man who has been teaching it longer than Dr. Pearson has been in the veterinary profession. Is Dr. Pearson justified in saying that this man did not have knowledge of how anatomy should be taught? If it is within the province of the Secretary of Agriculture to say that anatomy shall be taught his employees, then it is within his province to say how it shall be taught and how much shall be taught.

The committee did not need Dr. Pearson to tell it that the laboratory method of teaching is the best one, but the committee had knowledge which Dr. Pearson evidently has not, that there are schools giving only fourteen hours a year, and forty-two hours in the whole course, to dissections. Must the Secretary accept graduates of such a college or shall he give out advance information that unless a certain stated minimum of dissecting be done such graduates will not be eligible to employment in the Department? If many colleges had not been found very deficient in laboratory teaching no minimum would have been suggested by the committee for the guidance of the Secretary in judging whether applicants for employment had received adequate training.

Now, then, the whole thing seems to devolve upon this point, has the Secretary of Agriculture a right to lay down a minimum course or standard which applicants must conform to in order to be eligible to employment in his Department. Dr. Pearson says in one sentence of his report that the Secretary of Agriculture has that right, and in another that he has not. I rather believe him when he says that the Secretary has the right. It seems to me that he clearly has such a right and that Dr. Pearson himself has shown that it is a right which cannot be questioned.

Is the Secretary of Agriculture dictating how the colleges shall lay out their courses of study, or unlawfully controlling the colleges, when he gives out information as to what the courses should be to fit men for employment in his Department? He does not say to the colleges, you shall do this or that, but he does say to the prospective employees, you shall be adequately trained as judged by the reasonable standard which my committee has recommended.

On the face of it this criticism is factious, for the Secretary of Agriculture has done nothing more than to simply give out advance information to the colleges of the United States respecting the educational requirements he intends to demand of the employees of his Department, and what training they must have had in order to be eligible for appointments in the Bureau of Animal Industry.

Surely it is better for the schools, surely it is better for the veterinary profession that the Secretary of Agriculture state in advance, frankly and clearly, what he is going to insist upon from his employees. Is it not much better that he should state it in advance so that all may know what the qualifications are to which they must conform? The report of the Committee on Veterinary Education, appointed by the Secretary of Agriculture, is not an attempt to fix a standard for any veterinary college, but merely an attempt to show the least educational qualifications that the Secretary will permit his employees to have received.

It is admitted that this report of Secretary Wilson's Committee will do good to the schools of lower grade, but it is mysteriously hinted that it will injure and lower the standard of the better schools. Now, I am extremely interested, gentlemen, in knowing how this report is going to injure the better class of schools and colleges. It was hinted at yesterday in the discussion that we had at the meeting of the Association of

College Faculties and Examining Boards and hinted at again here to-day, and yet we have been given no clear, frank statement of how it is going to do it. The chairman of the Committee on Intelligence and Education appears to imagine that there is something in the report of Secretary Wilson's committee that is in some mysterious way going to lower the standard of those schools which claim to be superior institutions, but I would like to know how it is going to do it. Is it going to injure them to make them strengthen their weak points? If it makes them strengthen their weak points isn't that a benefit, even if it is some inconvenience? Certainly, it is hard for anybody but the head of one of these schools or colleges to see where the injury is to come from. It seems to me that any reasonable man must agree that whatever is going to cause the veterinary schools and colleges to strengthen their admittedly weak points is going to be for the great benefit and uplifting of the veterinary profession.

The next point of criticism that I wish to discuss is that of requiring five veterinarians on the teaching staff, not more than three of whom shall be graduates of any one school. Now, gentlemen, I wish to consider this frankly and candidly. Can you make a rule that will fit all conditions? You cannot. Then must you refrain from making such rule if it is needed and will do very much more good than harm, even if it be admitted that any harm will come from it, which I do not believe is so. If you do not make a regulation of this sort are you going to make one that will avoid putting certain institutions to a little inconvenience, or are you going to make a rule that will be beneficial to the greatest number? Is it individual schools that you are going to consider or is it the schools as a body, or the majority of the schools that you are going to try to elevate? That is a point that you have to keep in mind in considering this report or any other general proposition of a similar nature. Now, it is a well known fact by every man who is familiar with the conditions in the veterinary colleges in the United States to-day that the chief sinners in the violation of this regulation are some of the state colleges, that they take their own graduates immediately after graduation without experience or sufficient training and fill up their faculties with them. Do you think that the Secretary of Agriculture has not the right to say that they shall not do this if their graduates are to be employed by his Department? Has not the American Veterinary Medical

Association said that they shall have four veterinarians on their faculties? Haven't you established the principle right here in the American Veterinary Medical Association that the Secretary of Agriculture has the right to require that the faculties of American veterinary colleges be up to a certain minimum standard if the graduates of those colleges are to receive employment in his service? If we have the right in the American Veterinary Medical Association to do this regarding our membership, pray tell me why it is not right for the Secretary of Agriculture to do the same regarding his employees. It is a fact that I grant Dr. Pearson fully, that a teacher coming back to his alma mater after years of study and training elsewhere, may be the best man for that institution. No one will deny that, but we have said that he ought to have three years 'experience before he is put on the faculty of his own alma mater. Furthermore, while you may find one or two instances in the United States where these rules will hurt a good man, still for every case that you name where a good man is hurt I will name you three where the institutions will be benefited thereby. Right here today there are many men within the hearing of my voice who know that one of the greatest difficulties that the schools have had in maintaining a proper standard of education has been their inability to get good, live, new blood into their faculties, and that the chief reason for this difficulty is that those in control of most schools will not put the money into the institution necessary to get other than their own recent graduates. If this association and the American veterinary profession will support this single rule it will eventualy do a vast deal of good for every one of the schools, because I tell you there is not a school in this country that does not need some new blood on its faculty, that does not need to get outside ideas, that does not need the stimulus that comes from getting into contact with men educated in different institutions. And I want to say to you, gentlemen, that some of these schools, that have assumed to themselves the great superiority that we are continually hearing about, need a few outside men and some new blood in their faculties. Now, gentlemen, if you have the interests of the American veterinary profession at heart more than personal considerations you will back up this clause of the report of Secretary Wilson's committee. It is essential to the broadening and upbuilding of our institutions. I have been at the institutions in this country and I know the facts that I have stated are true, and so do you

know that they are true. Then why not correct the difficulty, even though one or two schools may imagine they are inconvenienced thereby.

Now, then, after being told that the Secretary of Agriculture did not have the right to say what the length of the courses should be, or to say what the subject taught should be, or how they should be taught, we are told that he has not the right to inquire how prospective employees got their training, but it is sufficient for him to ask have they the required information. This association has adopted the principle which Dr. Pearson repudiates; we have said what the course shall be for eligibility to membership and shall we deny the Secretary of Agriculture the same rights? Moreover, how on earth is he going to look into this matter, or judge of a man's competency unless he has some standard by which to judge the qualifications of applicants for employment in his Department? Gentlemen, you judge nothing except by comparison. It is simply arrant nonsense to talk about judging these colleges without first fixing some sort of a basis by which to judge them. How is it possible to judge if the training a man has received qualifies him for a certain position unless you have some information of the course of study he has covered and also a well-defined standard or idea of what he should have? Now, that is all the Secretary of Agriculture has done, and it seems to me that any man by reading the recommendations can see that this and nothing more is the purpose of the minimum course of study and requirements adopted by the Secretary of Agriculture. And it seems to me that any man must also know that there is nothing in that report to prevent any college going as far above the minimum as it shall see fit to go.

It may occasionally inconvenience certain individuals and institutions to insist that veterinarians teach veterinary subjects, that a veterinarian shall have had three years' experience before being assigned to the teaching of major veterinary subjects; and that the colleges shall not fill their faculties with their own inexperienced and recent graduates, but the general effect will be of great benefit to veterinary education in America, for there is no man in the United States so big or so great that you cannot find another one that is just about as big and just about as great. We heard yesterday and now again to-day that the state schools are to be the great institutions in the system of veterinary education in this country. I believe it is so, but it is also so

that in the past they have been the worst sinners in taking up their own cheap recent graduates and giving them professorships. The private schools to-day are picking up men, good men, and paying them better salaries than the state schools, and every one of you know it. Why not come out frankly and say that you do not like this rule because you have not had the money to enable you to comply with it. But, gentlemen, if the state schools will not do this themselves, let us help them do it, let us help them do something which will make them what some of their friends claim they are, the real shining lights of the veterinary educational institutions of this country. They are doing good work, many of them; I am far from saying that they are not, but they are not doing all of the good work, and if they are going to claim all the credit and assume to themselves such superiority, then let them be possessed of it and let them pay the money necessary to get superior men.

In all the criticisms of the recommendations of the committee appointed by Secretary Wilson, which I have heard here or elsewhere, there has not been a single remedy offered for in any other way correcting the real defects in the colleges which we sought to correct by our recommendations. Not one recommendation was made except for the purpose of correcting an existing vital defect, and while it has been intimated that these recommendations were made without adequate consideration and knowledge, I wish to state that I have not heard a criticism from any source during the meeting yesterday or in this report of Dr. Pearson's that was not made, carefully considered and fully discussed, pro and con, by the committee during its deliberations. No one has denied that the defects which we sought to correct are real and vital defects and no one has offered any other remedy for correcting them.

We are told that it is not a question of how the schools measure up to the standard of the Secretary of Agriculture, but of how they measure up to their own standard. I am not certain that I know what is meant by that, but if you had seen some of the standards that they are maintaining, such as I have seen in the last year, you would want them to measure up to a higher standard than many of them have maintained in the past.

I want to say, gentlemen, that I believe as fully as any of you that we have been doing a good work in the American Veterinary Medical Association and in all of the other organizations related thereto. We have done a great deal in the last

twenty-five years, and substantial progress has been made up to the present time, but you know how often it has been the case during that period that the state boards have not been able to get together and accomplish what they wanted, and you also know that the colleges themselves have not been able to come up to the standard of this Association as rapidly and speedily as we hoped. We have accomplished a great deal towards bringing them up to that standard simply by the adoption of a regulation that the qualifications of applicants for membership in the American Veterinary Medical Association should conform to a certain standard. Now, then, is not this report of the committee appointed by Secretary Wilson a step in the right direction? This report does give us some basis for the schools to work on and it does give the Secretary of Agriculture a standard for judging the schools so far as the training of veterinarians for service in the Department of Agriculture goes. It will serve to bring the lower grade schools up to a certain higher basis, that is all it means. Does anybody really suppose that the Secretary of Agriculture ever had such an absurd idea as to attempt to make uniform the schools? The colleges still have the same right that they always have had to lay out their courses of study as they see fit, providing they at least comply with this minimum standard of the Secretary of Agriculture, and they need not even do that unless they wish their graduates to be eligible to employment in the Bureau of Animal Industry of the United States Department of Agriculture.

It is not an unlawful attempt of the Secretary of Agriculture to force the colleges to a uniform standard. It is as plain as the nose on a man's face that the object of this report was to find out what the schools were doing, and then, when in possession of that knowledge, to make certain recommendations for the guidance of the Department which would help it in securing men of the necessary efficiency. Now, gentlemen, you may criticise the committee as much as you wish, we expected that, but I want to say that the committee has information that even Dr. Pearson, with all his wisdom, does not possess regarding the schools of North America. It has facts in its possession which Dr. Pearson never could get unless he was backed up by official authority from the Secretary of Agriculture. Now, in the light of all that evidence, and in the light of all the evidence which has been gathered together from all sources, the committee made up its report, and I want to say to you emphatically

that it did not put out a report without full knowledge of the facts and existing conditions, nor without full consideration. As to the competency of the committee, I am for obvious reasons not at liberty to speak. The Secretary of Agriculture and the veterinary profession may judge that question for themselves.

Now, gentlemen, all I want to say is that with all the progress which has been made in the last twenty-five years, it is not equal to the progress which has been made since June 1, 1908. I call upon the heads of the veterinary colleges of America here to-day to stand up and refute or back up that statement. I am not afraid of the result. The Secretary of Agriculture has done more in the last six months to elevate the standard of veterinary education, to build up and complete laboratories in our colleges, to extend the courses of study, to secure more proficient faculties, to raise the requirements for entrance and the standard for graduation than all the work of the previous ten years has done. Now, I ask you members of this serious, deliberative body, this body of men banded together for the promotion and the betterment of the veterinary profession in America, are you going to send this report of Dr. Pearson's to the Secretary of Agriculture condemning the report of his committee, and send it with your hearty approval and undo the work that has been done, or attempt to do so? I ask you to consider it seriously before you vote on that question. I am perfectly willing for and I would like to see Dr. Pearson's report put in the hands of the Secretary of Agriculture. I would like to see that done, for I know it will be ruthlessly analyzed and torn to pieces to a greater extent than I am able to do on the spur of the moment and in the short time at my disposal. I want to see that report go into the hands of the Secretary of Agriculture, but I do not want this association to say that it gives it its hearty approval because I do not believe the profession, or the rank and file of the membership of the American Veterinary Medical Association, feels in any such way about it. I do not believe that they for one moment would give this report of Dr. Pearson's their hearty approval.

In conclusion, I want to say that right at this hour the American Veterinary Medical Association, and the profession as here represented, has the opportunity to do more for the elevation of veterinary education in America than any other body ever had in its power to do during the entire history of the profession. You can throw away the opportunity or you can back up this advance that has been made. If you take this stand for ad-

vancement I need not tell you our great schools of veterinary science, like the University of Pennsylvania and Cornell University, will not be hurt, for no one man is sufficiently great to kill or cripple a school. Therefore, gentlemen, in conclusion, I want to move an amendment to the amendment that this report be sent to the Secretary of Agriculture, simply transmitted to the Secretary of Agriculture, without approval or disapproval, and along with it the discussion which follows.

The amendment to the amendment seconded.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.

The eleventh bi-annual meeting was held at Duluth, July 8 and 9, 1908, with President Amos in the chair. Forty members answered to roll call.

President Amos introduced Hon. Mr. Hayden, Mayor of the city of Duluth, who spoke as follows:

"MR. PRESIDENT AND GENTLEMEN OF THE ASSOCIATION.—On behalf of the city I wish to extend to you a most hearty welcome and I trust that your stay in our city will be marked by incidents of pleasure that you may take away pleasant recollections of this week. It is unnecessary for me to call your attention to our city because before you get through, under the guidance of the local representatives of your association, you will probably be introduced to all the points of interest. It is natural for each and every one to stick up for his own town. This reminds me of a story of St. Patrick's day parade in London. One Irishman going down the street feeling pretty good, said: 'Hurrah for old Ireland.' An Englishman said: 'Hurrah for hell.' The Irishman said: 'That is right, Every man for his own country.' That is like us in Duluth.

"I am sure you have come to our city in a good time of the year, and you won't be inflicted with rain and other disagreeable propositions that we have in the months preceding this one, and I believe that you will say after leaving our city that we have at this time of the year the best climate to be found. While they are sweltering in New York, as I read in the paper this morning, you who were here last evening were able to sleep under cover and sleep sound, and I am sure every man here has a

clear conscience, so he will have no trouble on that account. I am sure matters of great importance are coming before the meeting and you are probably all busy men and want to get out and see what is here.

"I am glad, indeed, of the honor of welcoming you to our city. Gentlemen, I extend a most cordial greeting" (Applause).

President Amos responded to the Mayor's address in a few well-chosen remarks.

The minutes of the previous meeting were then read by the secretary.

Dr. Leech—I understand that the committee on by-laws and constitution, since the action taken at the last meeting on that set of by-laws and resolutions adopted at that meeing, has asked for an extension of time, for changing that constitution, and that has been granted outside the meeting. I move the adoption of the minutes, as read, with the extension of time. Motion seconded and carried.

President Amos' Address.

The President then read his address, as follows:

"The eleventh semi-annual meeting of the Minnesota Veterinary Medical Association is to be congratulated and the members may well feel like congratulating themselves on the opportunity afforded us by the generosity of the citizens of the metropolis of the Northwest, a city a mile high and several miles long. We could not have selected a better place for the semi-annual meeting of the state association; and I am safe in saying no place has made such arrangements for our accommodation, as to the professional, literary and business parts of the meeting, and also the social features, as we will find out before the time has come to say good-bye, shake hands and leave for our various homes. I am sure we will feel like shaking hands with Duluth, and the home committee of entertainment, and joining in singing, 'They are jolly good fellows,' and be unanimous in expressing the home that Duluth will extend another invitation and say, 'Come again.'

"'All work and no play makes Jack a dull boy,' and I am sure the members of this association are fully able to enjoy a good time.

"The object of this eleventh semi-annual association meeting was intended to be both literary and social and for that end the clinical part has to a great extent been cut out so as to make room for a little more social enjoyment and intercourse than

heretofore. We are short-sighted indeed if we cannot see the benefit derived in coming in closer contact with one another in a social as well as a professional way, and for that reason the second day of the meeting has been given mostly to our enjoyment.

"My remarks will be short as there is not much for the president to touch on at this time. All work seems to be progressing in a most satisfactory manner. Our different boards all report 'a flourishing condition.' The State Live Stock Sanitary Board and the State Veterinary Association are indeed to be congratulated in the return to our midst of one whose departure from our state a little over a year ago we were sorry to chronicle. We are all glad to have Dr. Ward with us again and we extend a hearty welcome to him, and are glad that he has become one of us in person, as we know he has been in mind.

"As to the profession, it is encouraging to note that every step is marked with progression. We are receiving a high type of young men into the state association. The eyes of other states are on Minnesota, copying our veterinary and sanitary board laws and regulations. Our examining board is doing good work and working in closer touch with this association than ever before.

"It ought to be a matter of congratulation for the veterinary profession that the state association has been recognized by the state agricultural association, and we now have an equal voice with other associations and agricultural societies in the management of the State Fair; and, by the way, this recognition will, I think, necessitate a change in the articles of our incorporation. In article three (3) it reads, 'The purpose and object of this association shall be the cultivation of the science and art of veterinary medicine, etc.,' and right here we want, 'and promotion of live stock industry,' or something to that effect.

"The veterinary profession should be interested in the announcement that an effective hog cholera vaccine has been perfected which is prepared by our state experimental station. This is the vaccine that has been worked out by Dorset and Biles of the Federal Bureau of Animal Industry.

"The profession of the state and nation has met with a severe loss since our last meeting in the death of Dr. R. R. Bell, editor of the AMERICAN VETERINARY REVIEW, to whom we are all indebted for his untiring labor in the advancement and elevation of the veterinary profession.

"As we have considerable business to transact and several good papers to be presented and discussed, I will occupy no more of your valuable time. Gentlemen, I thank you."

Report of Committee on Infectious Diseases.

Dr. Whitcomb—This report is rather brief; it is for the last six months. The work with tuberculosis resulted as follows:

	No. Tested.	Reacted.
	17,136	1,462
At South St. Paul	668	16
Importations	994	8
Totals	18,798	1,486

Glanders.

Number of horses inspected	1,234
Number killed on inspection	36
Number tested after inspection	929
Reacted when tested	224
Number killed after test	179
Quarantined	52
Reinspected	186
Number killed after reinspection	39
Total killed	244

Anthrax.

Three animals died at Hastings in June. Dr. Beebe investigated this report and it was found on laboratory examination to be anthrax. In previous years animals died probably of this same disease. Last year seventeen cattle died, and the year previous seven cows and one horse died. The herd was vaccinated with Parke-Davis anthrax vaccine.

If you wish to ask any questions concerning this outbreak, I think Dr. Beebe will explain it.

Hog Cholera.

There are practically no reports at the present time of hog cholera, and very few have been received during the past six months. The Bureau of Animal Industry reports in Bulletin No. 102, concerning the production of immunity from hog cholera, would lead us to believe that the results obtained show quite clearly that a comparatively certain method of protecting hogs from hog cholera has been secured, and it is strongly be-

lieved that this method will be of great service in combating hog cholera. It is also very probable that it can be used successfully as a curative agent if administered in the early stages of the disease.

President Amos—You have heard the report on infectious diseases. Are there any questions you wish to ask Dr. Whitcomb?

Dr. Lyford—I would like to ask Dr. Whitcomb about this new treatment, and whether he has seen any of it tested, and at the same time give us a little of the technique as well as the theory.

Dr. Whitcomb—I think Dr. Reynolds can give us that, as he has been experimenting quite extensively at the farm.

Dr. Reynolds—There are two methods, one which we may call simultaneous, and the other serum only. The simultaneous consists of virulent blood and "serum only," injected separately into the two thighs at the same time; that is giving the animal hog cholera and an antitoxin for it at one treatment. The double vaccination is to be used where there is some time available, that is, if there is an outbreak of hog cholera; the simultaneous method could be used on the adjoining farms where the disease has not appeared. The serum only is used where protection must be immediate. For instance, a man has had one or two die and the serum only is used to protect the remainder of the herd, with the expectation that a considerable number of hogs are not infected, or if infected, the disease is not advanced to a stage beyond which the serum may protect. The process of developing the serum is this: A hog that is immune from cholera is given increasing doses of virulent blood, first 1 c.c. per pound, live weight, then 2½ c.c. and then 5 c.c. He gets in three injections 8½ c.c. for every pound of live weight, an enormous quantity of virus. The hog is thus hyper-immunized. It is bled at the tail about four times and about 450 c.c. taken each time. This is clotted; the serum is removed by pressure and preserved with one-half of one per cent. of carbolic acid. It has been demonstrated that serum after two or three years is as efficient as when first made. Every lot of vaccines must be tested as to potency and it is necessary to sacrifice at least one check pig in each test of potency.

We did some work with this at the station last fall, using shoats. In one lot we put eight which were given the simultaneous vaccine, and with them three unvaccinated pigs to test

the point whether there is any danger of spreading disease by this vaccine, which is in part virulent blood. None of the checks developed hog cholera, although associated with the hogs that were so vaccinated. In another pen we inoculated three shoats with virulent blood and put with them check shoats and those all died with hog cholera, proving the virulence of the blood used in the inoculating process. We have seven of those simultaneous vaccine hogs that have been through three exposures. We had them at the Fair Grounds and then at the University Farm, and on an adjoining farm. We divided the sick University Farm hogs into three pens and put one simultaneously vaccinated, one serum only and one check in each pen of sick hogs. Two of the checks died. The six vaccinated survived in perfect health and grew every day. Later we put seven vaccinated on the Carling farm where the disease was so virulent that they lost 39 out of 42. Our seven vaccinated hogs grew and thrived every day. They were there from April 1 to the 15th of June, shut up in the pens with the Carling hogs. I have them at the veterinary building now, and propose to use them for hyper-immunes. We hope to produce some vaccine this fall and a large quantity next year. It is the plan to distribute the vaccine this fall gratis where it will accomplish the most good. We propose to sell it next year at cost of production.

Dr. Lyford—How much serum do you require for a dose?

Dr. Reynolds—The dose is 20 c.c. There are several points to be perfected. One of the things to be accomplished is to increase the potency so a smaller dose will give immunity.

Dr. Cotton—Do I understand that the dose will insure a permanent immunity?

Dr. Reynolds—Permanent for a hog; that is, for a year or two. Serum only is supposed to give immunity for only a few months. This is one of the things not yet worked out.

President Amos—Any other questions on the report of infectious diseases? If not we will pass to the report on legislation by Dr. Cotton.

Report of Legislation Committee.

Dr. Cotton—I think that has been pretty thoroughly gone over. All we can do is to watch during the next legislature and see that there is no unpleasant legislation attempted.

President Amos—The next report is that on bacteriology by Dr. Beebe.

Report on Bacteriology.

Dr. Beebe—My report at this meeting will be rather brief. I have kept careful watch of the literature but have not been able to find much that was of practical interest to the veterinarian. There is one that I would like to bring up although not belonging to bacteriology, and that is that A. C. Crawford has recently discovered the cause of loco poisoning. Of course, this poisoning does not exist in this state, but is of practical interest to veterinarians. He has been able to isolate barium salts from the weed and found that this is the cause. He has been able to produce the disease by giving barium salts for some length of time.

Recently there was an article in a French journal that states that Negri bodies have been found in the salivary glands. A great many people have tried to demonstrate these structures in the salivary glands, but only recently have they been able to find them.

I would also like to mention the cuti-reaction for tuberculosis. I referred to this briefly at a previous meeting, stating that it had been tried but failed to find it successful in animals, although in the case of human it is quite extensively used for diagnosing tuberculosis, and at the present time there are large establishments putting out tuberculin in this form to be given either as a cutaneous application or by the ophthalmic method. This method has also been tried extensively in cattle, but as yet it has not proven of much benefit. That is they find that it is not very reliable. In some cases they will get a reaction where an animal is tuberculous and a great many times they will not get a reaction where, by post mortem examination, they find the animals badly infected.

I would also like to say a word regarding the outbreak of anthrax in this state. This occurred about five miles below Hastings on the Mississippi River. The land is located on flat ground that is overflowed by the river every year. Before the Mississippi River gets down to this point it receives the St. Croix and also Minnesota, so that of course a carcass could be brought from a long distance above and might be landed on this ground. In all probability that is how the infection originated at that place. I imagine they have had this disease on this farm for several years, at least in the last three years they have been losing cattle. Three years ago they lost seven head and a horse, last year seventeen head died and this year three. I made positive diagnosis by cultures and also by animal inoculation and

so there is no question as to whether or not it is anthrax. The cattle were vaccinated immediately after making a diagnosis and as yet there have been no more cases. The ceasing of the outbreak might be due to two things. It might be due to the vaccine, or to the fact that this pasture was flooded right after these cattle died so they have not been able to get the cattle on low ground since.

Dr. Lyford—I would like to ask Dr. Beebe if they have decided upon any treatment for loco poisoning?

Dr. Beebe—No, they have not.

Dr. Lyford—A great many people have written from the west asking what we know about it and if there is any treatment.

Dr. Beebe—No, they have not tried any treatment. They have only been able to demonstrate the poison that is present in the loco weed.

Dr. Price—Is it in rabies that they find negri bodies in the salivary glands?

Dr. Beebe—Yes.

Dr. Price—In regard to barium salts, the brick companies use it in bricks. A great many of their horses die from it and I might say that a physic of barium will produce inflammation of the bowels, and in loco poisoning you would have inflammation of the bowels.

Dr. Beebe—We know that barium is a purgative when given in small doses. Dr. Pearson published a paper some time ago and he advocated giving it in 10 or 15 doses, hypodermically, and we would expect giving it in teaspoonful doses to produce inflammation of the bowels. You do not get these symptoms unless it is given for a continuous period for several weeks. After several weeks you should get the production of these symptoms.

Dr. Cotton—In regard to the testing of cattle for tuberculosis by tuberculin being placed in the eyes I would like to inform the association that Dr. Dyson told me last winter that the Chicago Board of Health were using it as a test on cattle located in the city limits, and he rather smiled when he said it, but they were getting very satisfactory results. I asked why they were using it in place of the old test and he said it was cleaner, quicker and they could get over more ground.

Dr. Leech—Was it satisfactory to the board?

Dr. Cotton—It was satisfactory to the health commissioners. Dr. Dyson is not a member of the board.

Dr. Leech—Were they satisfied that they determined the disease from what the post portems showed?

Dr. Cotton—He did not go that far. They are using it on cattle in the city limits.

Dr. Leech—It is a very clean way and would save time, but the question of reliability is another question to take into consideration.

President Amos—Any other remarks. If not we will proceed to the next paper. The report on medicine by Dr. Price.

Report on Medicine.

Dr. Price—Recent literature gives us reports of the fight against tuberculosis amongst our dairy herds. Claims of considerable progress are made by German practitioners, especially for the recent modification of vaccination with "Bovo-vaccine," which is termed "Tauruman." It consists of human tubercle bacilli which are supplied in a perfectly fresh state, suspended in physiological salt solution. The injection confers immunity on cattle, which has been demonstrated by a great number of trials. It requires four weeks at least to confer immunity. Animals already infected become rapidly worse if vaccinated with "Tauruman," as also those suffering from pneumonia.

Exposure to infection from bovine tuberculosis must not be permitted for three months following vaccination. The usual precautions against infection of calves is to be observed. The period of immunity following vaccination with Tauruman is not stated.

The use of Aphrodine or Yohimbin Spiegel for the purpose of stimulating the generative organs in both male and female, where impotence exists, has received strong endorsements. Its expense makes its general use at present prohibitive in many cases, as there are certain subjects that are not benefited by it, and others of long standing require its continuous use for some time. Individual response also has to be studied in regard to dosage. Cuti-malleination has been tried with claimed success, but with greater by ophthalmo malleination. In man mallein diluted to 1 to 10 in carbolic solution is applied to fresh scarifications, if affected with glanders. A reaction occurs after twenty-four hours, and on the second day, swelling and hyper-sensibility with great itching. Between the second and third day the reaction is at its maximum and a citrine serosity oozes from the swelling. On the third to fourth day the swelling subsides. There

is desquamation on the fifth day. The skin remained red for some weeks. Reaction occurs even after a long time in man.

The same method is used for diagnosing tuberculosis.

Cancer in animals seems to be much more common than is generally supposed, and is being investigated by scientists and even by several governments, with a view to elucidating its causes and if possible discover a cure. So far no reliable remedy has been found. The incriminating agent is unknown.

Infectious anemia in horses has been observed in Alsace-Lorraine and adjoining parts. The various secretions and excretions of the body of affected animals conveys the disease. The blood and serum in small quantity will give rise to infection, when administered subcutaneously.

Dorsett and Niles of the Bureau of Animal Industry have prepared a vaccine for hog cholera that is claimed to be effective, as an immunizing agent.

The use of serums in infectious diseases is gaining headway. In cases of umbilical infection in calves and colts good success is claimed by Dr. Peters for antistreptococcus serum if used early. In furunculus, carbuncle of the coronary band or gangrenous dermatitis its use is also indicated, as well as in any infection due to streptococci or staphylococci.

Bursatti or Summer Sores.—As a preventive arsenic and iron have proved effective in a number of cases which have been treated in my private practice—given internally and applied locally.

Coley's Mixture is recommended by Dr. Lyford in cases of osteo-porosis or big head.

The administration of oxidizing agents in azoturia is again urged by me as the proper treatment for the disease, which convert the catabolic products and toxins into substances that are inocuous and suitable for excretion, such as uric acid, etc., the sulphates, adrenalin, chlorates, acids, uranium, nitrates, etc.

Tetanus is another disease in which these agents are indicated, especially when administered intravenously, the local wound being treated with hydrogen peroxide, bichloride of mercury, and iodine, alternately. Intravenous injection of solution of oxidizing agents, I believe, will cure this disease even in apparently hopeless cases.

The administration of drugs by means of electricity promises great results. Life and electricity are an inseparable combination, and many seemingly incomprehensible life processes will be demonstrated before long.

Report of the Board of Directors.

The board reported on applications for membership, as follows:

Applicants recommended for active membership—Drs. O. C. Selbey, M. J. Guidinger, C. A. Nelson, E. H. Sayer, F. J. Flanagan, A. J. O'Hara and H. C. Plapper.

The application of Dr. P. Bailey is recommended to be laid over until the January meeting.

The application of Dr. McDevitt be rejected.

It was moved, seconded and carried that the report be accepted, the by-laws be suspended, and the secretary instructed to cast the ballot for the election to active membership those names which the board recommended.

The secretary then cast the ballot as instructed.

Announcement by Dr. Annand, Chairman of Local Committee.

Dr. Annand—We have decided, of course, at your own suggestion, that the first day be devoted to papers and general business of the association, and on the second day, on which we usually have a clinic, we will have for recreation, so that we will get acquainted with each other. To-morrow morning at 9.30 we will leave the hotel for a boulevard drive along the hill, and you can see the lake and all parts of Duluth, the docks, harbor and the elevators in Superior and West Duluth. You can even see the St. Louis River, and at 1.30 in the afternoon we will take a boat ride to Fon du Lac, up the St. Louis River, which I think is one of the finest trips any of you ever had from the standpoint of scenery.

At 7.30 p. m. there will be the banquet. We wish all to stay for that part of the program.

Most of the ladies have decided to go to Minnesota Point to-day and from there to Lincoln Park, which we are very proud of.

A motion was made to adjourn until 2 p. m., which was seconded and carried.

Report of Committee on Colleges.

M. H. Reynolds, Chairman—Some time ago I addressed a letter to veterinary colleges inviting the secretaries to report anything in the way of news items concerning their institutions which might be of general interest to a state association, includ-

ing such items as freshman class of last year as compared with class of year before; number of graduates for 1907-1908; number of students that failed to graduate; changes in faculty; plans with reference to improvement in matriculation requirements, etc. Reports have been received from a portion of these institutions.

Dr. J. H. McNeil, dean of the Division of Veterinary Medicine, Iowa State College, under date of June 29, makes an interesting report from which I extract the following information:

"As compared with an entrance class of 43 for 1906-1907, the class of the past year numbered 61. The class of 1907 at the beginning had a membership of 30, eight of whom were graduated. The class of 1908 started with a membership of 35, 14 of whom were graduated.

"For the past several years the entering class has outnumbered the freshman class of the year previous by a steadily increasing number, notwithstanding the fact that the entrance requirements have been considerably raised.

"Our entrance requirements now demand a diploma from an accredited school for matriculation, or its equivalent, or the successful passing of a matriculation examination of a recognized college; and this has been adhered to except in a few instances, and the results of these exceptions have proven very satisfactory, the men in each case having proved capable and successful in the work. By maintaining this high standard of entrance requirements we are enabled to confine much of the general and preparatory work, usually included in a veterinary course, to the secondary schools. Consequently our students receive four years' technical training bearing directly upon veterinary medicine and including many subjects which tend to give him a broader grasp of his chosen profession, and more thoroughly equip him for his place in the professional world when he leaves this institution.

"Of the class of 1907 one member is now a professor of pathology, histology and therapeutics in a veterinary college."

Dr. A. H. Baker, of the Chicago Veterinary College, reports under date of June 30, 1908, from which I take the following:

"In reply I will say that in accordance with the report of the committee appointed by the Department of Agriculture to investigate the veterinary schools last winter, the Chicago Veterinary College will comply with the requirements embodied in

that report. The matriculation examination required is the second grade Civil Service of the United States Commission, with geography and United States history added.

"More laboratory space is arranged for the coming session. The various subjects will be graded to avoid repetitions.

"We had 148 freshmen last year as compared with 118 the year before. There were 113 in the senior class during the last session, 106 of whom graduated. The faculty consists of fifteen professors and three assistants. This is no addition to our previous faculty, but a change is made in the chair of histology. Dr. T. O. Edgar, M.S., M.D., takes the place of G. E. Amadon, B.A."

An interesting letter from Dr. Frazier, dean of the McKillip Veterinary College, brings us some suggestions and information and states that McKillip is meeting all the requirements of the Department of Agriculture.

"This institution has, during the present vacation, completely reorganized the faculty and rearranged its courses of study. The present organization is in accordance with the recommendations of the Department of Agriculture, recently issued. The college has added to its teaching staff two professors, Dr. F. P. St. Clair and Dr. B. E. Sherman, and a number of instructors.

"Improvement in the equipment of the college has been made at an expense of $10,000. This includes a complete laboratory equipment in bacteriology accommodating 160 men; a complete laboratory equipment in pathology accommodating 140; a complete laboratory equipment in materia medica accommodating 140 men; additions to the laboratory equipments of the departments of chemistry, histology and physiology; and the addition of a dissecting room. This institution is meeting all the requirements of the Department of Agriculture and our aim is to give a thoroughly scientific and practical course so far as present conditions will allow."

Dr. Mueller reported for the Indiana Veterinary College:

"The applicants for graduation in the Indiana Veterinary College, session 1907-1908, were 35; of this number 4 failed, leaving 31 graduates. Our freshman classes have been gradually increasing in the past five years, each succeeding class containing an increased number of better educated men. Our institution has added four additional well-known veterinarians to our teaching staff—Dr. A. W. Bitting, Dr. R. A. Craig, Dr. O. L. Boor, and the fourth to be still appointed. The chair of pathology has been changed.

"Dr. O. L. Boor, for many years connected with our State Examining Board, takes the chair of clinical medicine. Contagious disease will be taken by Dr. R. A. Craig. Dairy inspection by Dr. A. W. Bitting. Stock judging teacher is still to be appointed."

Under date of June 30, 1908, Dr. Stewart, of the Kansas City Veterinary College, makes a most encouraging report, to the effect that the freshman class of last year, 215, was much larger than that of previous years, and that a large percentage of these students have had high school training, 109 were graduated with the class of 1908. Three seniors failed to graduate. He goes on to state that:

"The course for the coming session has been materially enlarged, especially along laboratory and clinical lines, in this particular meeting the recommendations made by the special committee of the Board of Animal Industry, and made official through the approval of the Secretary of Agriculture. In fact any difference or shortcomings in the course will be rectified and every condition of the secretary's recommendations fully met. See the new announcement, where you will note, on page 16, a statement of the new curriculum.

"There have been only a few changes in the faculty. Dr. H. Jensen, of Nebraska, has been added and it is probable that others will be engaged before the opening of the next session, as the college is anticipating a still larger attendance for the coming term.

"The secretary's recommendation relative to matriculation examination will be promptly put in force notwithstanding the colleges have another year to meet the requirements, in fact the examination in this college has been nearly identical with the requirements for the past two years, with the exception of two subjects, which have been added; namely, geography of the United States and American History."

Dr. Law reports for the New York State Veterinary College:

"Our freshman class entering in 1907 was 35, as compared with 32 in 1906, and 24 in 1905. The 1905 class went down from over 50 because the entrance requirements were doubled in that year. The numbers are again rising and in a year or two the course will doubtless be extended to four years.

"The graduates of 1908 were but 18, representing the small class entering in 1905, but this will be remedied year by year.

"No immediate increase in matriculation requirements is anticipated. Every matriculant must now show four years of successful high school work. The conditions are parallel with those of other colleges in the university.

"The faculty this year loses the first director, who is retired at 70 on the Carnegie pension. Dr. V. A. Moore succeeds as director, retaining his functions as professor of pathology and bacteriology. Dr. D. Udall of the University of Ohio, succeeds to the chair of veterinary medicine."

It should be explained that the Kansas State Agricultural College, Veterinary Department; the New York-American Veterinary College, the San Francisco Veterinary College, and the State College of Washington were unintentionally omitted from the list of colleges invited to report. The chairman of your committee recently had a quite extended conversation with Dr. Schoenleber, dean of the Kansas State Institution, and was pleased to learn of the rapid and satisfactory development of the institution. Among other things, it may be remarked that they are just completing a new $75,000 building for the veterinary department. They are starting in with a four-year course. This very young institution has already won its way to recognition among the veterinary colleges listed under class "A" by the committee, which will be reported later.

Members of this association are doubtless all aware that a committee of prominent veterinarians was selected some time ago for the purpose of investigating American Veterinary Colleges, with a special view, I presume, of classifying and listing those whose graduates should be accepted for civil service examinations in the Bureau of Animal Industry. This committee has reported. Its report appeared as Circular No. 133, Bureau of Animal Industry, United States Department of Agriculture, issued July 6, 1908. [Report was published in full in the August REVIEW.]

I think that most of the older members of this association will realize by reading the report that in order to be a good student at a modern, well equipped veterinary college, the young man will have to "go some," and there will be very little time for sitting around the stove and visiting in the dean's office. The total number of hours to be covered in three years of six months each is 3,200, or an average of something over 42 hours per week for the entire period. Note that the report recommends and all of the reputable colleges will unquestionably accept, three years

of six months each exclusive of final examinations and holidays, and that there must be 150 days of each year of actual teaching and 3,200 actual teaching hours, 42 hours per week for the entire period.

I remember visiting one veterinary college not so very long ago where, during the ordinary class room hours there were actually no classes in the entire institution in progress, a considerable number of students were sitting around the stove telling stories and a study of their courses outlined only claimed four hours a day of class room work. There was not a microscope in the institution. I understood from good authority that very many of their periods were on paper only and that even lecturers who actually gave work were frequently irregular or missed their periods altogether.

This institution, however, is not listed among those mentioned under class "A."

We have had a number of good veterinary colleges in the country, colleges that have been for years actually living up practically to the recommendations of this committee. These institutions will need to make but slight changes in their work in order to comply fully with these regulations and such are the colleges which we ought to recommend for the young men who are planning to take veterinary training.

Papers were read and discussed as follows: "The Need of a Better Meat and Milk Inspection," Dr. G. E. Leech; "Glanders," E. L. Tuohy, B.A., M.D.; "Something New," Dr. C. C. Lyford; "The Relation of Eczema to Tissue Reaction and Constitutional Derangements," Dr. Edmund Mackey.

Committee on Resolutions.

The committee on resolutions, Dr. G. E. Leech, chairman, reported as follows:

Resolved, That we hereby express our appreciation of the untiring efforts of the local committee, in furnishing to this society the commodious quarters and the elaborate entertainment which we have received in the city of Duluth, and extend to them a vote of thanks, and express our appreciation of the welcome extended to us by the mayor and citizens; and be it further

Resolved, That we extend a vote of thanks to those who have contributed to the interesting program, thereby making this one of the best meetings of this society.

Whereas, Death has taken from the ranks of the profession Dr. A. Youngberg, a member of this society, be it hereby,

Resolved, That we express our deep sense of feeling at the loss of one that has contributed so freely his time and labor to the interest of the profession, and be it further,

Resolved, That a copy of these resolutions be spread upon the minutes of our society.

Whereas, Dr. R. R. Bell, one of the active members of the veterinary profession of America, and one of the foremost workers in the profession, has been taken from our midst by death, be it hereby

Resolved, That the Minnesota State Veterinary Medical Association expresses its deep sympathy and that it regrets his loss to the veterinary profession.

The report was adopted by vote of the association.

The second day was devoted to recreation including a tally-ho ride on the boulevard in the afternoon, a steamboat excursion down the St. Louis River in the afternoon, terminating with a banquet in the evening.

C. A. MACK, Secretary.

GEORGIA STATE VETERINARY ASSOCIATION.

The semi-annual meeting was held at the Kimball House, Atlanta, September 3, 1908, being called to order at 11 a. m. by the president, Dr. P. F. Bahnsen. Others present were as follows—the largest attendance of any previous meeting: Dr. J. R. Anderson, Macon; Drs. W. E. Carnes and H. G. Carnes, of Atlanta; Drs. J. N. Cook and C. D. Coker, of Atlanta; Dr. E. L. Fryer, Blakley; Dr. T. E. Jago, Athens; Dr. A. Jasme, Savannah; Dr. T. E. Lindsey, Rome; Dr. J. E. Miller, Gainesville; Dr. M. A. Morris, Savannah; Dr. J. H. Oliphant, Augusta; Dr. H. J. Schwartz, Atlanta; Dr. W. A. Scott, Columbus. Honorable members present, Dr. C. A. Cary, of Auburn, Ala., and Prof. C. L. Willoughby, of Experiment, Ga.

After approval of minutes of the December meeting held at Auburn, Ala., the president announced a committee to complete the Constitution and By-laws of the association, with advice of Dr. Cary. A recess was taken to permit the committee to prepare its report. Upon assembling after lunch, at 2 p. m., the committee submitted draft of final Constitution and By-laws, which was accepted unanimously, and put into effect at once, and ordered that copies be printed for distribution.

The literary program was taken up, as follows:

Paper on Epizootic Lymphangitis, by Dr. C. A. Cary, of Alabama. It was stated this disease had not yet appeared in the southeast, but the author desired to have practitioners on the lookout, and the paper was given close attention.

Dr. John E. Miller, of Gainesville, gave description of a case of a cow, diagnosed by Dr. Nighbert, of the Bureau of Animal Industry, as parturient meningitis, occurring about three weeks after calving, which had many symptoms different from parturient apoplexy.

Dr. Scott, of Columbus, detailed some methods used in the treatment of cases of open joints. Other successful treatments were mentioned by Drs. Anderson and Oliphant.

Dr. Jasme, of Savannah, read a short paper on "The Bots," mentioning some life history of the bot-fly, and describing an infection upon his own hand.

Dr. P. F. Bahnsen, of Americus, gave an interesting paper on "Fistulous Withers," and modern methods of treatment.

At the close of the program, a business session was held, to take the proper steps on the part of the association in complying with the law recently passed by the Georgia Legislature on the creation of a Board of Veterinary Examiners, and regulation of practice in the state. The requirement being that the members of the Examining Board be endorsed by the association, nominations were called for, Vice-President Carnes being in the chair. Dr. Bahnsen presented a list of candidates for membership upon the Examining Board, regard being had for proper distribution from the various sections of the state, and also among the different colleges represented, as follows:

Dr. Thos. E. Jago, of Athens (Ont. Vety. Col.); Dr. Chas. R. Jolly, of Atlanta (Univ. of Pa.); Dr. John R. Anderson, of Macon (Chicago Vety. Col.); Dr. M. A. Morris, of Savannah (Am. Vety. Col.); and Dr. J. C. Schwencke, of Thomasville (Copenhagen).

After some discussion, these candidates were unanimously endorsed by the association, and the secretary instructed to send the list to the Governor for appointment, which was done the following day.

The time and place of the winter meeting was left to the executive committee, with preference to Atlanta, during holiday week.

Adjourned.

C. L. Willoughby, Secretary.

VETERINARY ASSOCIATION OF THE DISTRICT OF COLUMBIA.

The regular meetings of the Veterinary Association of the District of Columbia were resumed on the evening of October 21, 1908, at 514 Ninth street, N. W., Washington, D. C. The president, Dr. John Lockwood, occupied the chair, and there was the usual large attendance.

Dr. J. F. Morris was elected to membership.

It was decided to hold the meetings of the association hereafter on the third Wednesday of each month, instead of the fourth Wednesday, as heretofore.

Dr. M. Page Smith, of the Committee on Contagious Diseases, reported that since the adoption of the muzzling ordinance in the district the number of cases of rabies in dogs had decreased greatly; he reported a noticeable increase in cases of tetanus of horses, and several cases of spinal meningitis. He reported favorable results from the antitoxin treatment in tetanus. Dr. E. S. Walmer reported a number of cases of tetanus in horses in his practice, the antitoxin treatment being used, and recoveries resulting. Dr. John Lockwood spoke at length on the prevalence of tetanus.

There was an interesting discussion with reference to the proper designation of members of the veterinary profession—veterinarian, veterinary surgeon or veterinary—the consensus of opinion being that the term *veterinarian* was the correct and proper one.

The question of the operation of the veterinary law of the District of Columbia having been brought up, Dr. Lockwood stated that during the short time it had been in operation it had proven a success in every respect.

Drs. E. S. Walmer, J. F. Morris, C. E. Dornheim, J. P. Turner, and John Lockwood were appointed as the Committee on Contagious Diseases to report at the next meeting.

F. M. ASHBAUGH, Secretary.

ON Saturday evening, October 10th, a few of the prominent veterinarians of Detroit surprised Dr. S. Brenton, by calling at his residence, and after partaking of supper, presented him with a fine gold watch fob, in commemoration of his fiftieth birthday.

NEWS AND ITEMS.

DR. H. J. THOLE, formerly of Brookville, Ind., is now practicing at Deer Lodge, Montana.

DR. A. J. SAVAGE, of Colorado Springs, is taking a post-graduate course at the Kansas City Veterinary College.

VETERINARIAN B. E. BARHAM, of Louisiana, is enrolled as a student at Toulane Medical College, New Orleans, La.

DR. EDWARD PUGH, for several years located at Lawton, Oklahoma, has recently established a practice and has a hospital at New Carlisle, Ohio.

THE family of Dr. R. P. Lyman accompanied him to Kansas City. The Doctor has engaged apartments in the Albemarle, 2900 Troost avenue, for the winter.

DR. W. A. DAVIDSON, of Kansas City, Kansas, was recently appointed Veterinary Inspector of the Bureau of Animal Industry and reported to Chicago for duty the last of October.

DR. LOGAN BRUCE HUFF, Spokane, Washington, was married, October 3, to Miss Lulu Eva Bumgarner, daughter of Mr. and Mrs. James J. Bumgarner of Moscow, Idaho. Dr. and Mrs. Huff will be "at home," Spokane, Washington, after November 1.

DR. D. M. CAMPBELL, of Hiawatha, Kansas, has been appointed Milk and Dairy Inspector by the city of Topeka, Kansas. That thriving capital city has become very interested in the pure milk problem and have made a wise selection in procuring the services of Dr. Campbell.

DR. LOGAN B. HUFF, an inspector, Bureau of Animal Industry, Spokane, Washington, has been introducing his newly acquired bride to his many friends and relatives in St. Joseph and Kansas City. The Doctor says it is not well for man to live alone, even if engaged in the Government service.

Mr. SCOTT WISNER reports 108 cases have been presented at the clinic of the Veterinary Department of the Colorado Agricultural College from September 8 to October 10, 1908. These represent 50 different diseases. Ten autopsies were also held, representing nine different diseases, and included horses, cattle, hogs and dogs.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
American V. M. Ass'n.....	Sept. 14-17, 1909.	Chicago.....	R. P. Lyman, KansasCity, Mo.
Vet. Med. Ass'n of N. J.....	Jan. 14, 1909....	Trenton.....	W. Herbert Lowe, Paterson.
Connecticut V. M. Ass'n.....	.....	New Haven ..	B. K. Dow, Willimantic.
New York S. V. M. Soc'y.....	Sept., 1909	Ithaca	J. F. De Vine, Goshen.
Schuylkill Valley V. M. A.....	Dec. 16, 1908....	Reading	W. G. Huyett, Wernersville.
Passaic Co. V. M. Ass'n.....	Call of Chair...	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.....	Call Exec. Com.	.....	R. P. Marsteller, College Sta.
Massachusetts Vet. Ass'n.....	Monthly.....	Boston.....	Wm. T. White, Newtonville.
Maine Vet. Med. Ass'n	.....	Waterville....	A. Joly, Waterville.
Central Canada V. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Michigan State V. M. Ass'n.....	Feb. 2-3, 1909...	Lansing.....	Judson Black, Richmond.
Alumni Ass'n, N. Y.-A. V. C.....	April, 1909.....	141 W. 54th St.	T. F. Krey, N. Y. City.
Illinois State V. M. Ass'n.....	Dec. 1-2.....	Chicago.....	N. I. Stringer, Paxton.
Wisconsin Soc. Vet. Grad.....	.....	.....	S. Beattie, Madison.
Illinois V. M. and Surg. A.....	Jan. 5, 6, 7, 1909.	Louisville.....	Frank Hockman, Louisville.
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	F. Torrance, Winnipeg.
North Carolina V. M. Ass'n.....	.....	Raleigh	Adam Fisher, Charlotte.
Ontario Vet. Ass'n.....	.....	.....	C. H. Sweetapple, Toronto.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	W. Reid Blair, N. Y. City.
Ohio State V. M. Ass'n.....	January, 1909...	Columbus.....	Sidney D. Myers, Wilmington
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.	Pittsburgh....	F. Weitzell, Allegheny.
Missouri Vet. Med. Ass'n	.....	St. Joseph....	F. F. Brown, Kansas City.
Genesee Valley V. M. Ass'n.....	Jan. 14, 1909....	Rochester.....	J. H. Taylor, Henrietta.
Iowa Veterinary Ass'n.....	.....	.....	H. C. Simpson, Denison.
Minnesota State V. M. Ass'n.....	Jan. 13-14, 1909.	St. Paul.....	C. A. Mack, Stillwater.
Pennsylvania State V. M. A.....	.....	Philadelphia..	F. H. Schneider, Philadelphia.
Keystone V. M. Ass'n.....	Monthly.....	Philadelphia..	A. W. Ormiston, 102 Herman St., Germantown, Pa.
Colorado State V. M. Ass'n.....	.....	Denver	M. J. Woodliffe, Denver.
Missouri Valley V. Ass'n.....	Feb., 1909.....	Omaha	B. F. Kaupp, Fort Collins, Colo.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence ...	T. E. Robinson, Westerly.
North Dakota V. M. Ass'n.....	.....	.....	C. H. Martin, Valley City.
California State V. M. Ass'n.....	2d Wed. in Aug.	Alameda.....	C. M. Haring, U. C., Berkeley
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles..	J. A. Edmonds, Los Angeles.
South Dakota V. M. A.....	2d Tues. in Jy. '09	Sioux Falls...	J. A. Graham, Sioux Falls.
Nebraska V. M. Ass'n.....	.....	Grand Island.	H. Jensen, Weeping Water.
Kansas State V. M. Ass'n.....	Jan., 1909.....	Topeka.....	B. Rogers, Manhattan.
Ass'n Médécale Veterinare Française "Laval".....	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigand, P. Q.
Kentucky V. M. Ass'n.....	.....	Not decided ..	D. A. Piatt, Lexington.
Washington State Col. V. M. A ..	Monthly.....	Pullman, Wa.	Wm. D. Mason, Pullman.
Indiana Veterinary Association...	An'l, Jan., '09...	Indianapolis..	E. M. Bronson, Indianapolis
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Twin City V. M. Ass'n.....	2d Thu. ea. mo .	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Mississippi State V. M. Ass'n....	.....	.....	J. C. Robert, Agricultural Col.
Georgia State V. M. A.....	Dec. 23.....	Atlanta.....	C. L. Willoughby, Experiment
Soc. Vet. Alumni Univ. Penn.....	June, 1909.....	Philadelphia..	B. T. Woodward, Wash'n, D.C.
Virginia State V. M. Ass'n	.....	Norfolk.....	W. G. Chrisman, Charlo'sv'le.
Oklahoma V. M. Ass'n.....	.....	.....	W. H. Martin, El Reno.
Veterinary Practitioners' Club....	Monthly.....	Jersey City ...	A. F. Mount, Jersey City.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—9th St., N. W.....	F. M. Ashbaugh, Wash., D. C.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	Chicago.....	J. Madsen, Chicago, Ill.
Arkansas Veterinary Society.....	.....	.....	B. H. Merchant, Little Rock.
York Co. (Pa.) V. M. A.....	Dec. 1, 1908.....	York, Pa.....	E. S. Bausticker, York, Pa.
Philippine V. M. A.....	.....	.....	R. H. McMullen, Manila.
Montana State V. M. A.....	.....	Helena.....	
Veterinary Ass'n of Alberta... ..	.....	.....	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Chicago Veterinary Society.....	2d Tues. ea. mo.	Chicago	J. M. Parks, Chicago.
Maryland State Vet. Society.....	.....	Baltimore.....	H. H. Counselman, Sec'y.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo.

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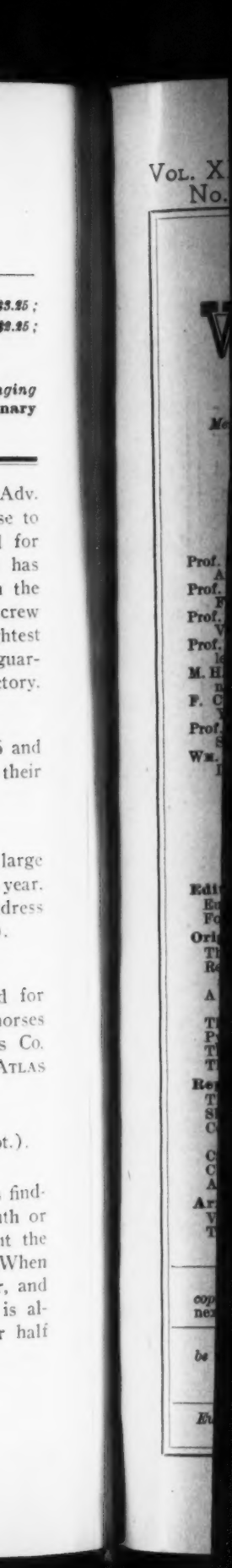
SHARP AND SMITH will be found this month on page 35 (Adv. Dept.).

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